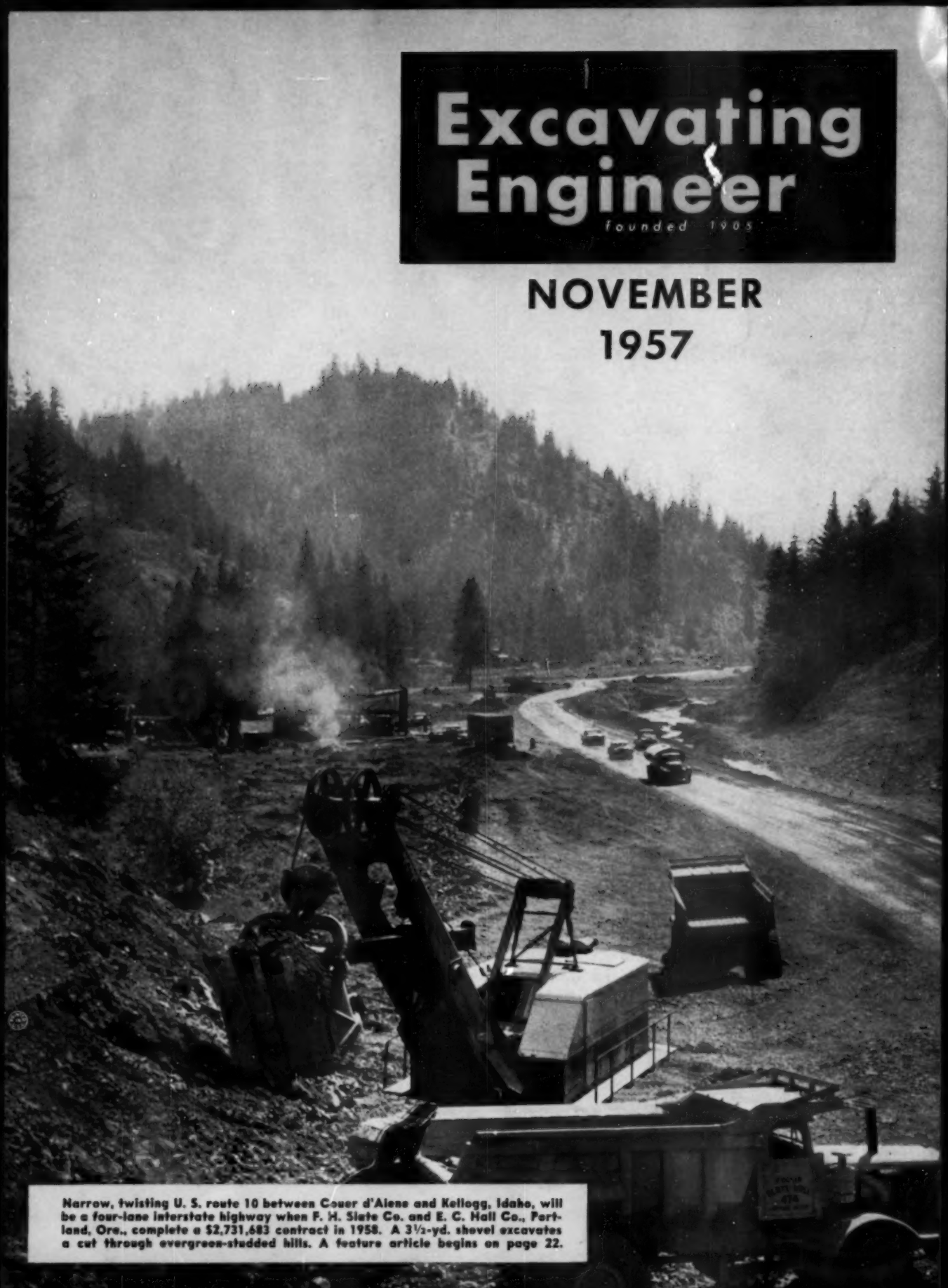
Excavating Engineer

founded 1905

NOVEMBER 1957



Narrow, twisting U. S. route 10 between Coeur d'Alene and Kellogg, Idaho, will be a four-lane interstate highway when F. H. Slate Co. and E. C. Hall Co., Portland, Ore., complete a $2,731,683 contract in 1958. A 3½-yd. shovel excavates a cut through evergreen-studded hills. A feature article begins on page 22.

San Andreas, California . . .

another example of the cost-cutting features that bring repeat orders for Bucyrus-Erie rotaries

On the strength of the performance records of a Bucyrus-Erie 50-R rotary blast hole drill placed in operation in 1954, the Calaveras Cement Company recently installed a new Bucyrus-Erie 40-R drill at its No. 1 quarry near San Andreas, Calif.

The 40-R is drilling 9-in. holes through limestone to an average depth of 70 feet. Even though this rig has been operating only a short time, the drill operator reports the 40-R is "doing a fine job." Calaveras Cement is believed to be the first cement company in the West to convert completely to rotaries — all Bucyrus-Erie.

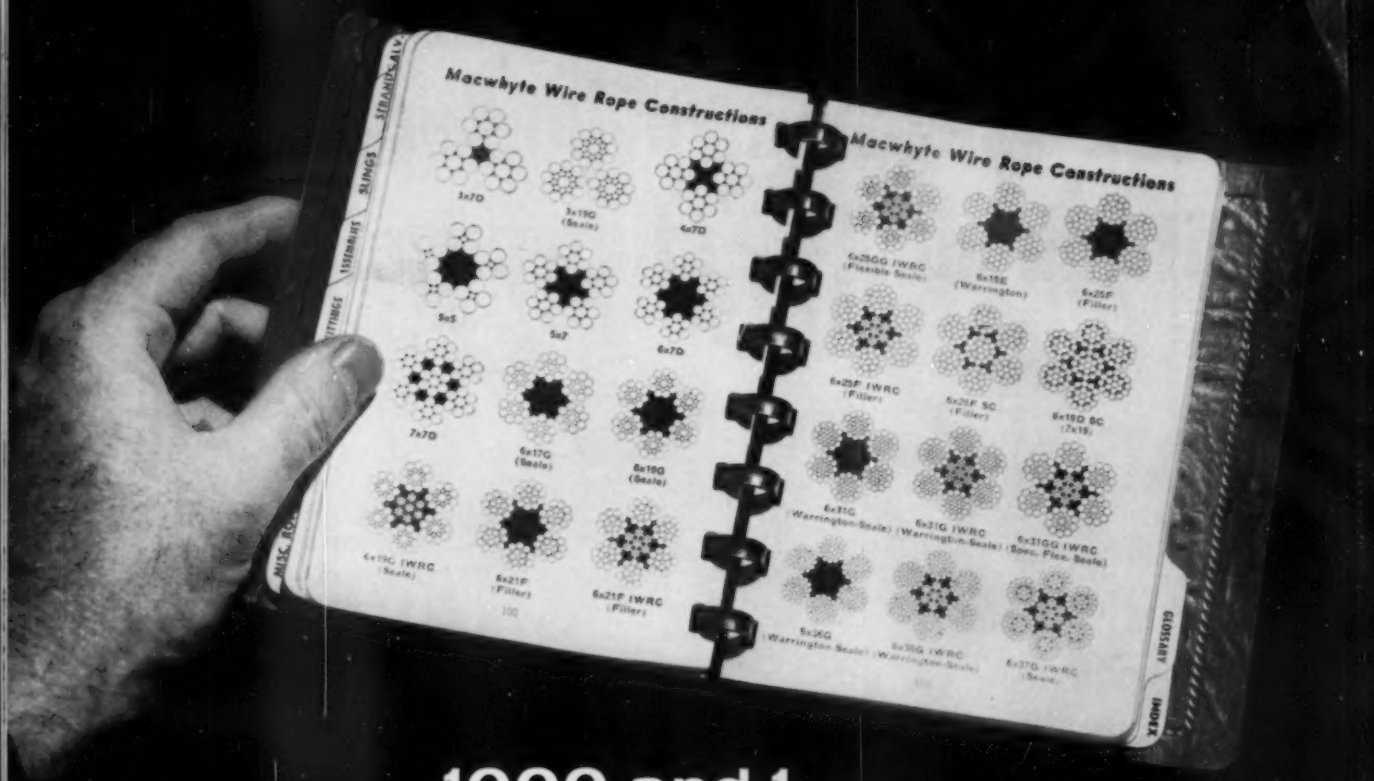
Among the many reasons for the outstanding success of these drills are: rotary drive with Ward Leonard electric control of rotating speed; hydraulically powered pulldown force; remote-controlled power-driven tool handling unit; and air blast cleaning of drill holes.

Two models are available — the 40-R for drilling 6¾- to 9-in. holes, and the 50-R for drilling 9⅞- to 12¼-in. holes. Holes can be drilled continuously for 32 ft. 9 in. (50-R) and 27 ft. 9 in. (40-R) before an additional pipe section has to be added.

Bucyrus-Erie rotaries can speed your drilling operations . . . cut your drilling costs. Write direct for detailed, illustrated literature. 57B57C

A Familiar Sign . . . BUCYRUS ERIE *. . . at Scenes of Progress*

BUCYRUS-ERIE COMPANY • SOUTH MILWAUKEE, WISCONSIN



1000 and 1

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Each designed to give you the correct wire rope for your equipment. Whatever your equipment needs, there is a Macwhyte Wire Rope to serve you the sure, dependable way. WHYTE STRAND Wire Ropes by Macwhyte are produced to meet every job specification under all conditions, PREformed for flexibility, and Internally Lubricated for outstanding service. Macwhyte Wire Rope is available in stock for immediate delivery.

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Manufacturers of Internally Lubricated PREformed Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies, Monel Metal, Stainless Steel and Plastic Coated Wire Rope, and Wire Rope Assemblies. Special catalogs available.

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Rock-speeding Payhauler® features hit schedule-beating pace.....

ON US 27

The three-unit "65" Payhauler fleet of Greer Brothers and Young, highball 2,000 cu yd of rock 1,200 feet daily. Rock-moving climbed 'way ahead of schedule, on this U. S. 27 relocation job near Lincoln, Kentucky!

Both Payhauler sizes—the 18-ton "65", and 24-ton "95"—have built-in, schedule-beating performance!

Exclusive high reverse and "zip-around" power steering gives a Payhauler regular "pick-up truck" spotting ease. The "big-target" Payhauler body speeds the shovel's dip-and-dump cycle.

Load-matched and road-matched turbo-charged diesel power gives these heavy-duty, off-highway haulers super-fast get-aways. Next-to-automatic Payhauler control gives safe, capacity-adding speed—even over rough terrain! The "65" can roll at 36.4 mph; the "95" at 38 mph!

And the double-acting hydraulic hoist, *under full controlled power both up and down*, contributes cycle-speeding 10-to-12-second Payhauler dumping!...Extra speed on every job-phase adds up to extra profit-tons hauled!

See how a Payhauler on your job will give you a decisive, profit-margin of difference! See your International Construction Equipment Distributor for a demonstration!

Find out for yourself *all about* all the big-money-making Payhauler features. Send for your free copy of this new, fully-illustrated Payhauler catalog!

International Harvester Co.
180 N. Michigan, Chicago 1, Ill.

Gentlemen:

☐ I am a contractor. ☐ Am interested in becoming a contractor. ☐ Am an equipment operator (please check square that applies.) Send me Payhauler Catalog (CR-603-G)

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City_____ State_____

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International Harvester Co., 180 N. Michigan Avenue, Chicago 1, Illinois

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

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Excavating Engineer

founded 1905

South Milwaukee, Wisconsin

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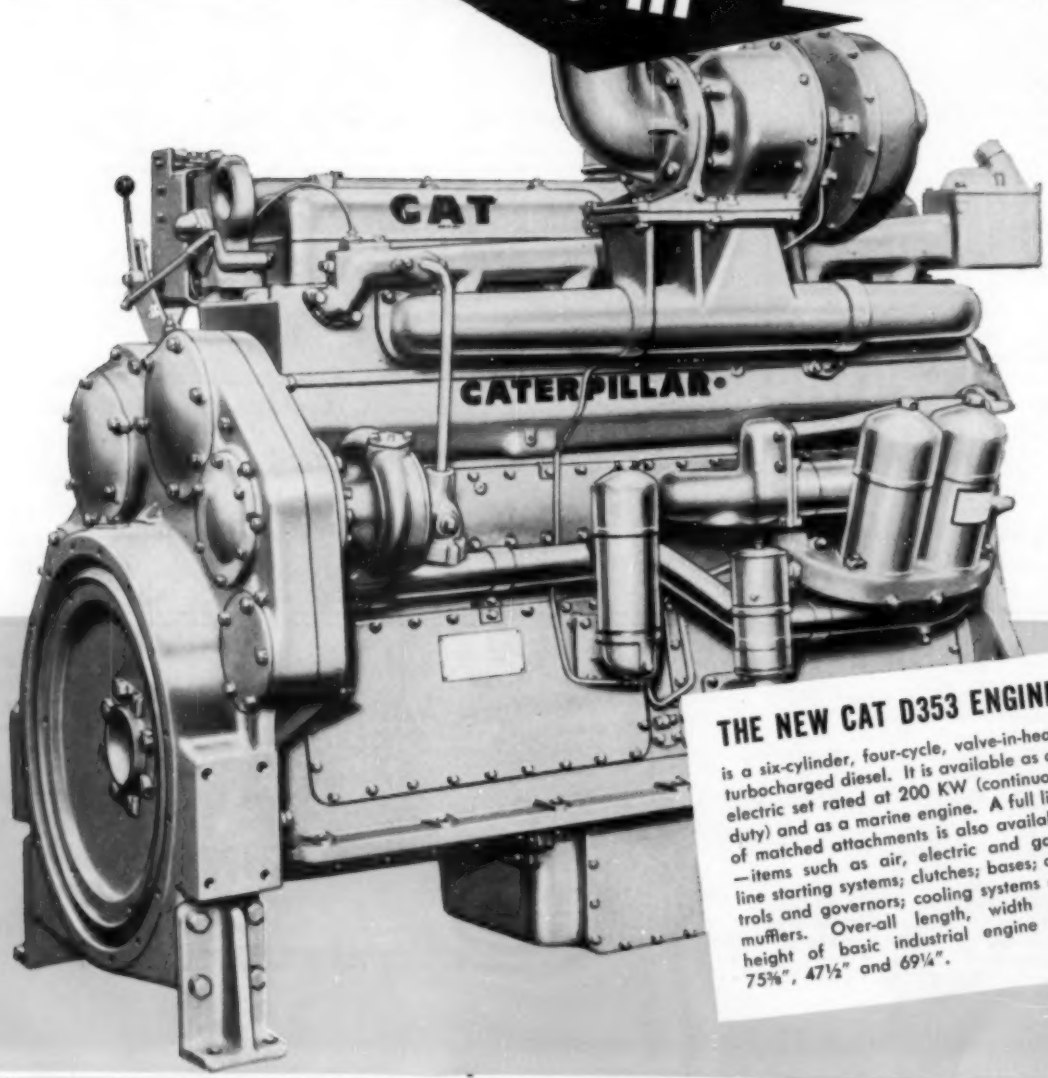
Caterpillar announces in the world's most

The engine that delivered outstanding is now available as the D353 Industrial

D397 650 HP† | D375 430 HP† | **New D353 390 HP†** | D342 225 HP† | D339 140 HP†



THE NEW CAT D353 ENGINE

is a six-cylinder, four-cycle, valve-in-head turbocharged diesel. It is available as an electric set rated at 200 KW (continuous duty) and as a marine engine. A full line of matched attachments is also available—items such as air, electric and gasoline starting systems; clutches; bases; controls and governors; cooling systems and mufflers. Over-all length, width and height of basic industrial engine are: 75⅜", 47½" and 69¼".

another heavy-duty engine advanced line of diesels

performance in the famous D9 Tractor Engine, Electric Set and Marine Engine

D337	D326	D318 (SERIES G)	D315 (SERIES G)	D318	D315	D311
310 HP†	200 HP†	175 HP†	115 HP†	137 HP†	91 HP†	65 HP†

†Maximum output capacity

Adding to Caterpillar's line of modern heavy-duty engines, there's now the Turbocharged D353 rated at 390 HP (maximum output capacity). This engine, a prototype of the unit in the mighty D9 Tractor, is job-proved after thousands of hours of operation in the field!

Like all modern CAT* Diesels, the D353 incorporates in its design the advanced features developed by Caterpillar in a quarter century of diesel leadership. Compact and sturdy, it is built for the hard work. Its four-cycle design delivers the long, effective power stroke that puts power to more efficient use than other types of engines. Its turbocharger utilizes waste energy from the engine exhaust to increase over-all efficiency and economy. Its fuel system requires no adjustment. There are no cylinder ports to clean. And its exclusive Caterpillar single-orifice injection valves, combined with the precombustion chambers, permit the use of a wide range of fuels including premium diesel fuels as well as low-cost No. 2 furnace oil *without fouling*. All these and other features add up to performance that no unit in its power class can match.

With the addition of the D353 to the Caterpillar Engine line, you now have a wider choice than ever for your requirements. Engines are available up to 650 HP (maximum output capacity) and electric sets up to 350 KW (continuous duty). Either as original or replacement power, there's one among hundreds of different arrangements that exactly meets your needs. Leading manufacturers of machinery can supply these models in the equipment they build.

For complete information about the new D353 and other Cat Diesels, see your Caterpillar Dealer. Let him show you how diesel leadership based on a quarter century of experience can engineer the modern, heavy-duty diesels of tomorrow.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

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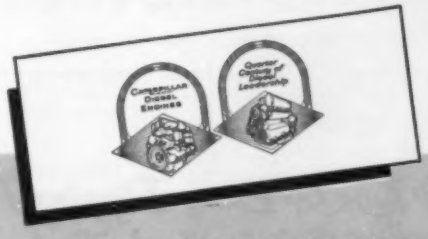


Caterpillar "Firsts" in a Quarter Century of Diesel Leadership

- "Hi-Electro" hardened cylinder liners
- Chemically conditioned cylinder liners
- Stainless-steel piston protectors
- Aluminum alloy bearings
- Interchangeable, adjustment-free fuel injection equipment
- Capsule-type injection valves
- Service meters
- Superior lubricants (detergent oils)
- Notarized, certified power

AND MANY MORE!

Certified Power for Cat Diesel Engines

Through the years, Caterpillar Engines have earned a reputation for *honestly rated power*. Now Caterpillar backs this reputation with a *notarized certificate* covering the horsepower capabilities of each engine. Caterpillar is the first and only manufacturer to give you this assurance of capacity. You have a right to demand *certified power* when you invest in an engine. You get it when you buy from your Caterpillar Dealer!

HENDRIX

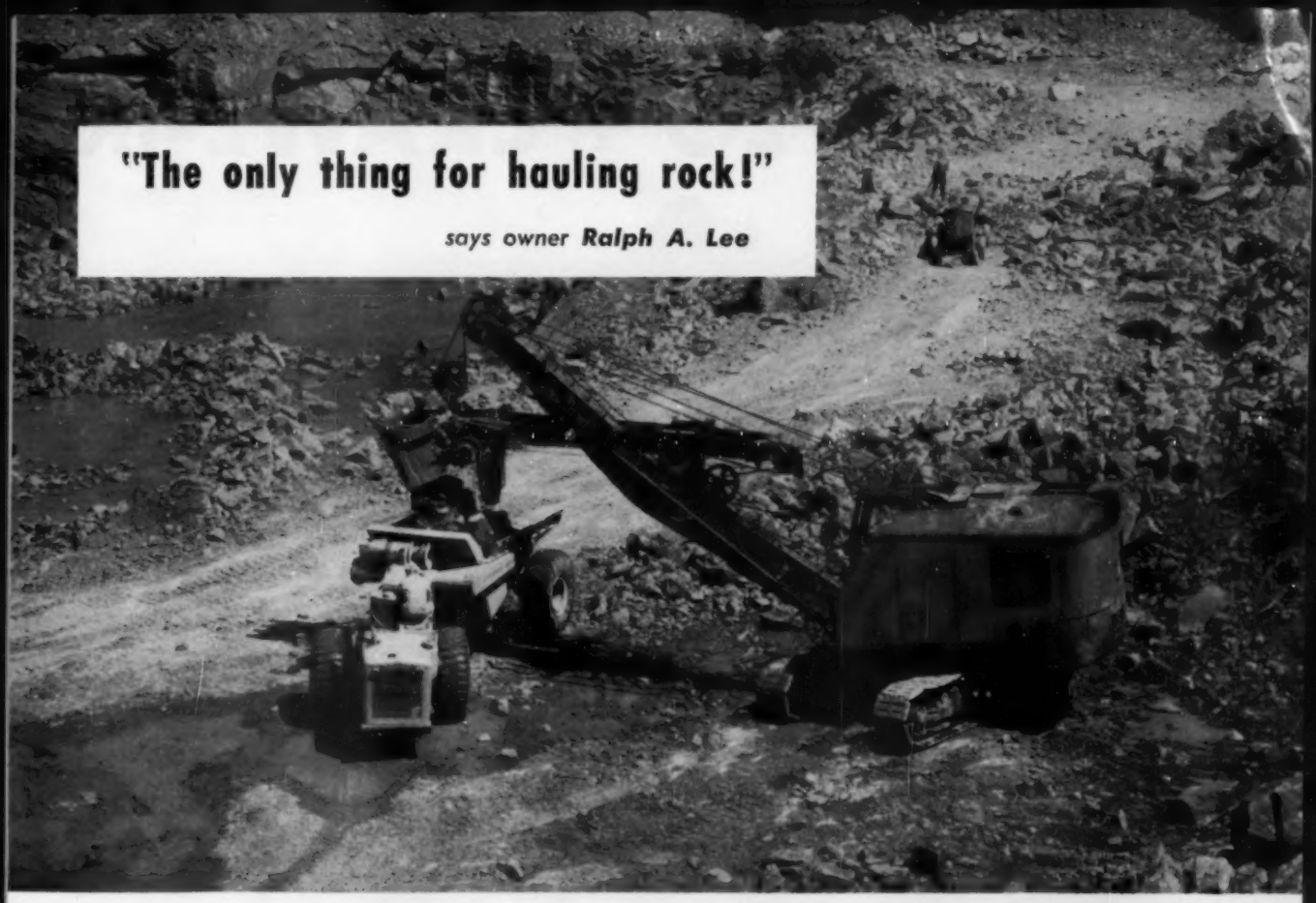
DRAGLINE BUCKETS

On any digging operation Hendrix Dragline Buckets move *bigger* loads *faster*. A full bucket every cycle results in more material moved . . . in less time . . . for the lowest "cost-per-yard."

"A Type for Every Digging Purpose"...
¼ to 40 Cubic Yards-Perforated or Solid

HENDRIX MANUFACTURING COMPANY, Inc.
MANSFIELD, LOUISIANA

Hendrix Lightweight DRAGLINE BUCKETS



"The only thing for hauling rock!"

says owner ***Ralph A. Lee***

"We went through $52,000 worth of trucks in 5 years before we switched to Tournapull® Rear-Dumps," says Ralph A. Lee, owner of Millbrook Quarries, Inc., Broad Run, Virginia. "These 'Pull Rear-Dumps are the only thing for hauling rock. Trucks just can't compare!"

Supt. Douglas E. White adds, "Three 'D's' replaced ten trucks formerly used at our quarry. Tournapulls are the best equipment we ever had!"

3 "D's" haul 1,000 tons daily

The three D Rear-Dumps, which have 11-ton rated capacities, haul about 1,000 tons of limestone to Millbrook's crushing plant in an 8½-hour day . . . about 5,000 tons in a week.

Haul, approximately .5-mile long, leads up a steep grade for 300′ out of the pit . . . then up a 1% grade the rest of the way to the grizzly. Rear-Dumps average 10 mph over the rocky, uphill route.

These Rear-Dumps, equipped with side boards, sometimes carry as heavy as 13 to 15 tons in some materials — according to Foreman Douglas E. White.

Reduce maintenance, tire costs

Because Tournapull Rear-Dumps have no hydraulics, no jack lines, no driveshafts . . . no frames, sub-frames, springs, or tie rods . . . most common causes of hauler breakdowns and expense are eliminated. Maintenance time is low, too, because there is no hydraulic mechanism to check . . . . only a few places to lubricate. Millbrook management finds that 30 minutes per day is ample for Tournapull lubrication and maintenance checks.

Tire expenses are lower on Tournapulls, also. Owner Ralph A. Lee says, "Switching from trucks to Tournapulls has cut our tire costs at least one-third."

"Easy to run! Smoother to ride!"

Operators, too, have reason to praise Tournapull Rear-Dump performance. James W. Riley is enthusiastic. "I like everything about these rigs," he says. "They're easy to operate . . . as simple to run as an automobile. I like 'em fine!"

If you have haul equipment problems at your quarry, you will want to know more about Tournapull Rear-Dumps. Three sizes: 11, 22, and 35-ton capacities. Write us for complete information on these sturdy, high-production LeTourneau-Westinghouse machines.

138 hp Tournapull Rear-Dump hauls heaped load of rock up a 13% grade out of the pit. Three "D's" replaced 10 trucks . . . handled all the limestone mined at Millbrook Quarries.

DR-1181-Q-b

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

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. . . a highway construction team that gives you completely mechanized drilling power at its RUGGED BEST!

THE new Ingersoll-Rand CRAWL-IR is the most completely mechanized, self-propelled crawler drill ever developed. Boom swing, boom lift, tower tilt, tower swing and tower lift are all hydraulically controlled at the touch of a throttle, permitting faster, easier and safer setups for drilling in any position. And because it tows its own air compressor, even up grades and over rough terrain, you don't have to take other equipment off the job for this purpose.

Teamed up with a Gyro-Flo 600-cfm, it gives you a drilling combination that has no equal for economy and dependability of operation. The famous Gyro-Flo rotary action, thoroughly proved by more than six years of on-the-job service, is your best assurance of low-cost, virtually maintenance-free air power. Ask your IR Distributor or representative for complete information on this pace-setting drilling team.

IR CONTRACTORS' COMBINATION

Ingersoll-Rand 14-612

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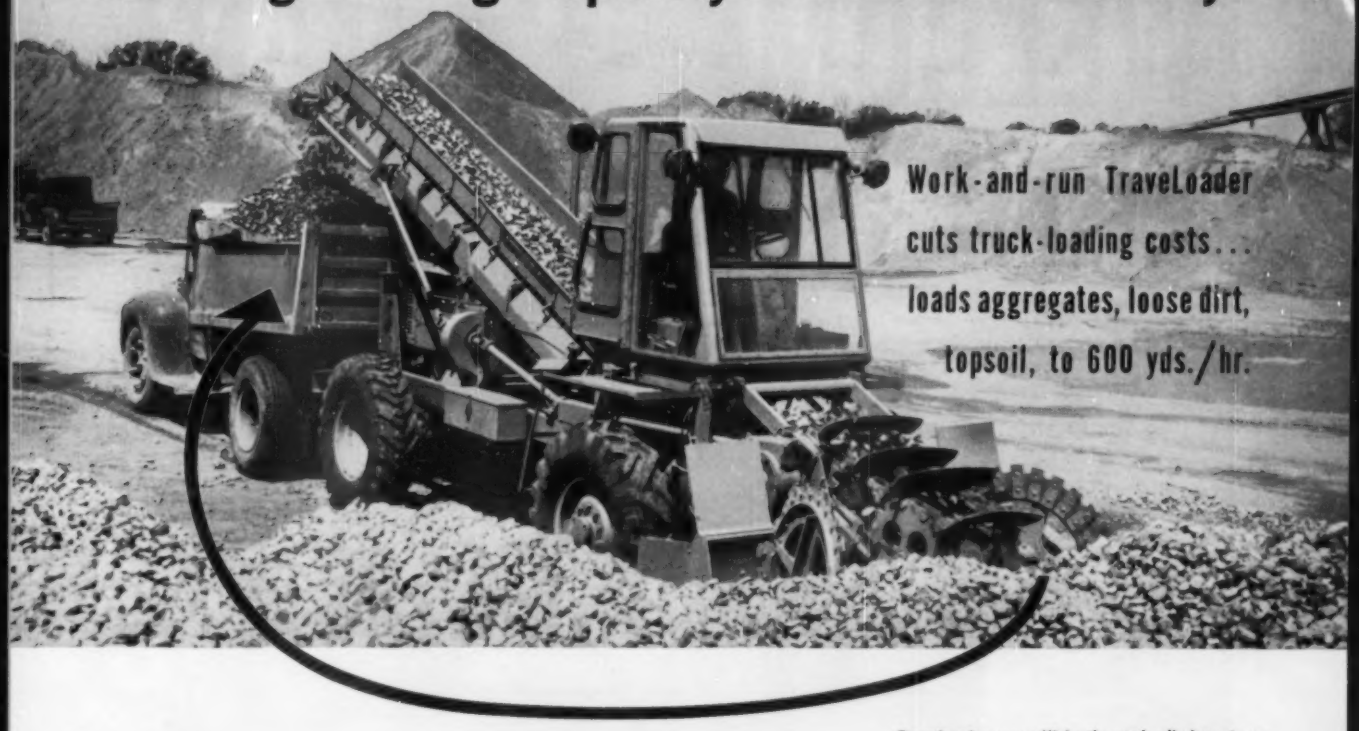
THE BEST AIR EQUIPMENT FOR BETTER HIGHWAYS

Need big loading capacity?...instant mobility?



Work-and-run TraveLoader cuts truck-loading costs... loads aggregates, loose dirt, topsoil, to 600 yds./hr.

If you handle big yardages of gravel, crushed stone, sand, slag, topsoil, or surplus dirt, you'll reduce your truck-loading costs with an Adams* TraveLoader that will load up to 600 yds./hr., depending upon materials. And when loading from scattered stockpiles or loose materials beds, 26.7 mph TraveLoader loads fast and economically ... saves extra time and money by cutting expensive work-stopping delay in moving.

Truck-a-minute loading

LeTourneau-Westinghouse-built TraveLoader gathers and loads all kinds of loose, granular materials from stockpiles... from windrows formed by graders... from natural banks. It heaps trucks evenly and fast... continuously discharges full load of material off belt running at 450′ per minute. With a 40 to 60-second truck-loading cycle, TraveLoader handles big jobs fast... keeps work projects on schedule... cuts truck waiting-time... holds your loading and hauling cost low.

Loads in continuous motion

Unlike front-end loaders, TraveLoader works without wearing turns, back-ups, or other waste motion... does not need to push against a solid pile to load cleanly. Loader can move forward at any of 5 working speeds (25 ft. to 167 ft. per min.)... can adjust feeder to suit slope of shoulder. Machine gathers and conveys material from any width up to 8′, and discharges evenly into trucks. Conveyor is hydraulically adjustable to best truck height, for minimum spillage and dust-blow.

Rear or side delivery

Standard TraveLoader conveys material to the rear... loads on road shoulders, in one lane, over backfilled excavation, almost anywhere ... minimizes obstruction to traffic. With addition of reversible cross-conveyor (optional), it loads parallel trucks at either or both sides — fast as haulers can position.

Handles many jobs in one day

Rubber-tired TraveLoader has 5 travel speeds, moves quickly from job to job at speeds to 26.7 mph... from windrow, to stockpile, to bank work. Positive, convenient controls make loading simple, make maneuvering and traveling as safe and easy as driving a truck. Choice of diesel or gasoline engine. Machine weight approximately 16,700 lbs.

TraveLoader can efficiently work all day at a single location, loading trucks one after the other... or it can quickly maneuver and "run" between loadings at 26.7 mph, handling many scattered assignments in a day's time.

We'll be happy to send you complete information and names of users working TraveLoader on loading projects similar to yours.

Cross-conveyor (optional), shiftable left and right, directs material to trucks at either side ... speeds loading, cuts positioning time, balances load... boosts haul-trips per day.

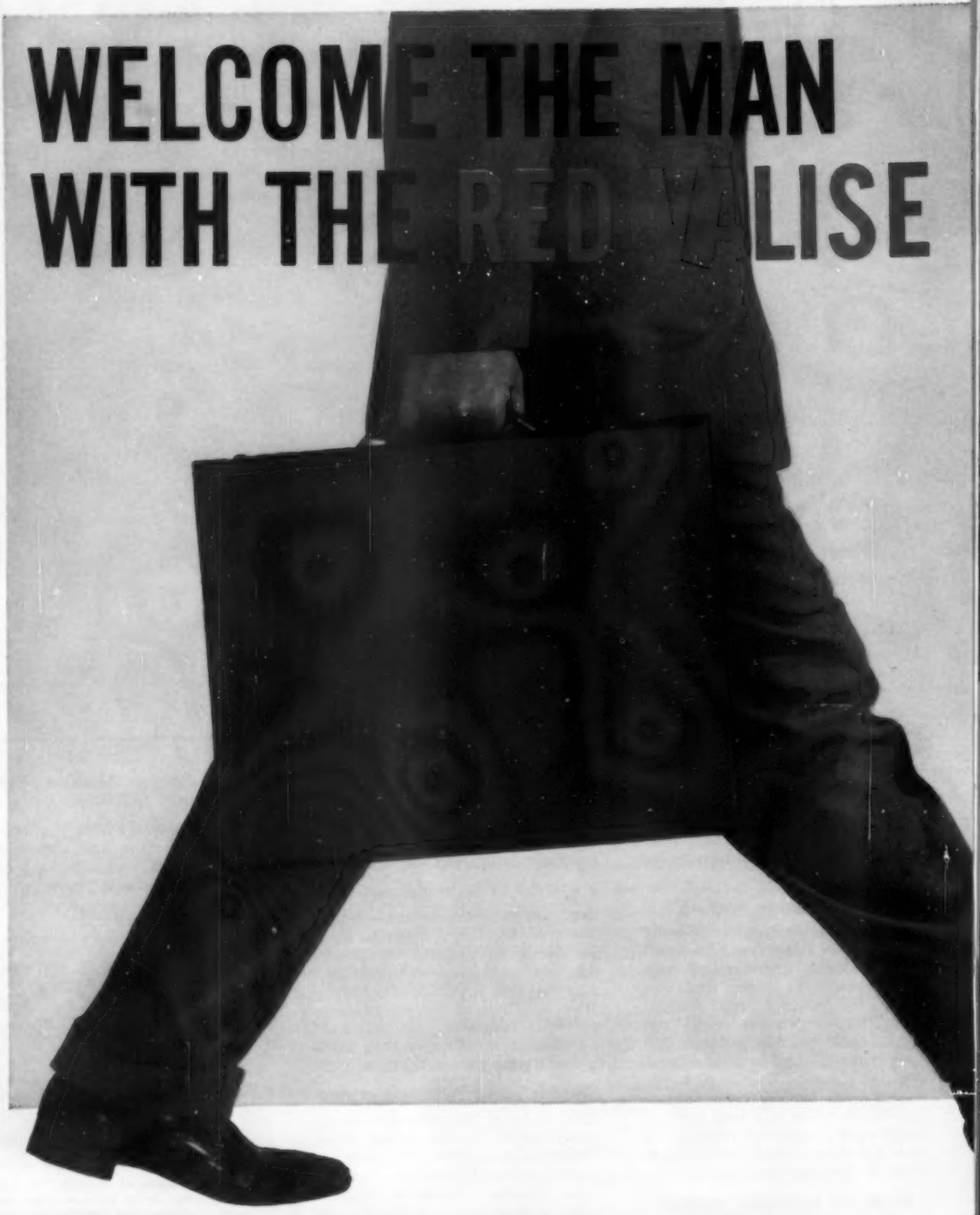
*Trademark TL-1462-DC-1

LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

WELCOME THE MAN WITH THE RED VALISE



HERCULES **BLASTING CAPS**

Partners in Dependability with Hercules® Explosives

He can show you why Hercules sets the pace in Blasting Caps

Whatever you need in a blasting cap, Hercules has it—And the Hercules representative can show you an actual dummy sample from this "full line" kit. The Man with the Red Valise will be calling on you soon—if he hasn't already—and when he does you'll learn why Hercules is a recognized leader in blasting cap development.

Look at this Hercules lineup:

Electric Blasting Caps—Manufactured in two strengths with plastic-coated copper leg wires available in lengths from 4 to 250 feet.

Waterproof Electric Blasting Caps—Designed to withstand high water pressure.

No Vent® Delay Caps—One-piece, all-metal shell. No Vent helps prevent misfire in wet work. Available in delay periods from "0" to "15". An exclusive Hercules development.

No Vent® Short-Period Delay—Similar in construction to No Vent cap but in 27 delay periods from 25 milliseconds to 2950 milliseconds.

Electric Squibs—Special firing devices for use with black blasting or pellet powder where electricity is employed.

Special Packings—All-electric blasting caps may be obtained packed on cardboard spools for easier handling. Primatube®, a rigid cardboard tube available for some types of caps, makes a primer when the tube is fitted over a dynamite cartridge.

Seismic Aids—Vibrocap® SR has been designed especially for seismic prospecting; it registers the "time-break" accurately throughout the entire range of low and high firing currents. Titan® Booster 20, a special booster detonating device for use with regular Hercules® Electric Blasting Cap or Vibrocap® SR, is also available.

You name it and the Man with the Red Valise will show it to you.

HERCULES CAPS FEATURE:

Dependable Fire—Special alloy is used as the bridge wire in the firing element of Hercules Electric Blasting Caps. Wire is noncorrosive.

Engineered Shell—Bronze shell of a Hercules cap goes through fifteen separate operations while it is being expertly shaped.

Tough, High Dielectric Insulation—Leg wires of Hercules caps are coated with plastic insulation for outstanding toughness, resistance to abrasion, superior dielectric qualities.

Double-Packed Wallop—Bridge wire extends into the priming charge and makes positive contact to give rapid ignition.

Securely Anchored—A cast sulfur plug in the upper part of shell anchors entire firing mechanism in place.

Watertight Waterproofing—A special Hercules waterproofing formulation minimizes the possibility of moisture or dampness penetration.

Explosives Department

HERCULES POWDER COMPANY

INCORPORATED

900 Market Street, Wilmington 99, Delaware

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Pittsburgh, Pa.; Salt Lake City, Utah; San Francisco, Calif.

XR57-6

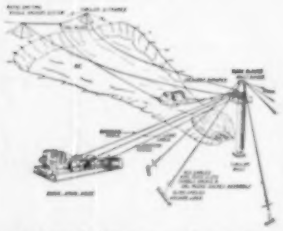
Cut Materials Handling Costs . . . Dig *and Haul* In One Operation With A SAUERMAN MACHINE

Digging and hauling are reduced to one continuous operation by using either a Sauerman DragScraper or Slackline Cableway. By combining the two basic steps of material flow, equipment and labor costs are halved—or even more. A single machine, controlled by one man, does the same job as the multiple equipment required by other methods.

Profitable handling is further assured by a low maintenance cost of 1½ cents per cu. yd. for an average size installation. Larger machines drop this cost still lower. Important, too, is the money saved on power. You pay only the cost of moving the actual digging tool—the Crescent DragScraper or Slackline bucket. Heavy machines with limited handling-to-dead weight capacity are eliminated.

General Handling, Wet or Dry— Pit or Hill Excavation and Reclamation

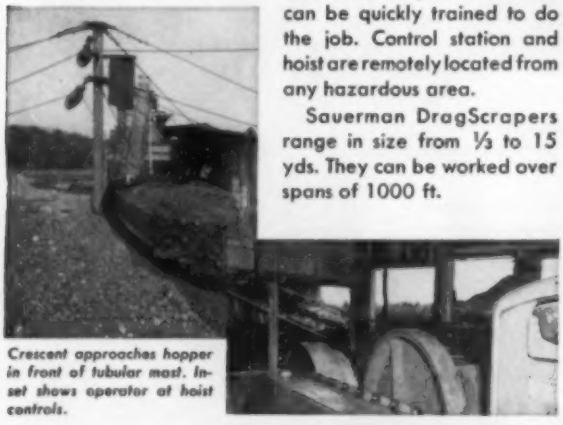
3-yd. DragScraper digs and hauls sand and gravel from pit to plant hopper over a distance of 400 ft.



A DragScraper is recommended for these and similar jobs. This machine handles the toughest digging and operates on a hillside or underwater with as much facility as dry level ground. It hauls directly to hopper, crusher or storage pile.

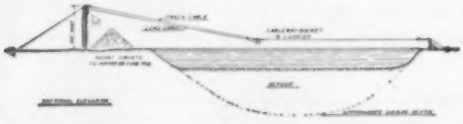
Operation is simple and safe. An inexperienced man can be quickly trained to do the job. Control station and hoist are remotely located from any hazardous area.

Sauerman DragScrapers range in size from ⅓ to 15 yds. They can be worked over spans of 1000 ft.



Crescent approaches hopper in front of tubular mast. Inset shows operator at hoist controls.

Deep Digging, Underwater Recovery— Conveying to High Delivery Point



This 1½-yd. Slackline Cableway is digging in 70 ft. of water and conveying to stockpile on an average haul of 600 ft.

When deep digging is required—or anticipated in the future—a Sauerman Slackline Cableway is the best machine. This powerful excavator can dig 100 ft. or more below water, lift its load and deliver to a high pile up to 1000 ft. away. This surge pile can be held in readiness for plant needs.

The bucket inhauls at high speed and dumps automatically. The dumping point is determined by a stop button on the track cable. Gravity returns the bucket to the digging point completing the fast operating cycle.

Sauerman Slackline Cableways range in size from ⅓ to 3½ cu. yds. Now available with torque convertor power, the Slackline is increasing its production over 25%.

Bucket automatically discharges onto a 60-ft. high cone pile. Mast in foreground rises 90 ft.

The best Sauerman Machine for your plant is governed by the nature of the deposit, location of material, the depth and plant layout. Why not consult Sauerman engineers about your plant? Their recommendations will be based on almost fifty years of sand and gravel excavating machinery experience. Ask for Catalog A (DragScrapers) and C (Slackline Cableways).

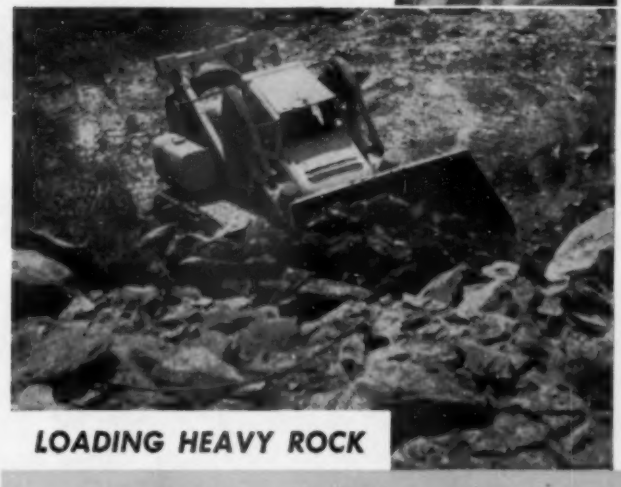
SAUERMAN BROS. INC. 622 SOUTH 28TH AVENUE • BELLWOOD, ILLINOIS

CRESCENT SCRAPERS • SLACKLINE and TAUTLINE CABLEWAYS • DUROLITE BLOCKS

IN SPOTS LIKE THESE YOU NEED AN EIMCO EXCAVATOR

TIGHT QUARTERS

TUNNEL EXCAVATING



LOADING HEAVY ROCK

Illustrated are just three job conditions where 105 Eimco Excavators outperform other earthmovers. It takes care of the tough jobs just as efficiently as it does the easy ones.

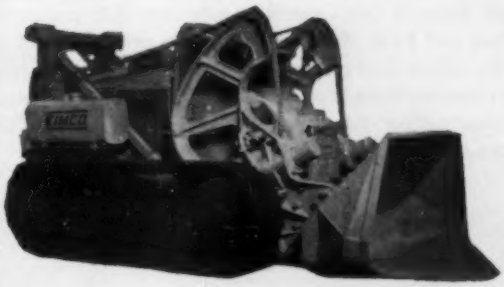
The knowledge and experience gained from building thousands of underground loaders was used to full advantage when we designed and engineered the Eimco Excavator. We gave it the same extra strength for severe service; increased the life and efficiency of working parts thru simplification; gave it I.T.R. (independent track reversal) mobility and "passenger car" power-shift operating ease. Then we put the operator up front where he can see what's going on.

Overhead discharge speeds cycle time; makes it possible to dig, load and dump from one position and do road-work without stopping highway traffic.

With powerful crowding action (39,000 lbs.) the Eimco 105 loads large rocks without secondary blasting usually required when boom shovels or other loaders are on the job.

The Eimco 105 Front-End Loader combines this same high tractor mobility with front end loading versatility for handling scores of different jobs economically.

Write for information on the Eimco 105 Tractor Excavator or Front-End Loader . . ideal highway building tools.



EIMCO 105 EXCAVATOR

THE EIMCO CORPORATION

Salt Lake City, Utah—U.S.A. • Export Offices: Eimco Bldg., 52 South St., New York City

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B-295

These TD-24 full-time

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Exclusive, all-weather, seconds-fast International gasoline coversion starting. Direct combustion heat conditions the TD-24's engine, seconds-fast—for full diesel performance. You avoid the warm-up delays and service complications of a surplus starting engine—earn money while "slow starters" are warming up!

Exclusive International Cerametallic-faced engine clutch action. The TD-24 is the only king-sized crawler with this big feature. Immune to heat and cold, this long-lasting clutch gives full-load power-transfer efficiency—anywhere, anytime! This dry-type clutch of simplified design eliminates "high frequency" servicing demanded by clutches with "cooling systems."

Exclusive, years-proved Planet Power steering. Why put up with load limiting "dead track drag" on the turns in a king-sized steering clutch crawler? Why not profit from TD-24 Planet Power steering that enables you to pull or push as big a load on the turns as on the straight-away? See how TD-24 two-track turning power never backs off from a load. "Take the turn" to new profits with Planet Power steering!

Exclusive cycle-speeding on-the-go shifting. In either Torque-Converter or Gear-Drive model, the TD-24 gives instant stall-preventing Hi-Lo shifting, without stopping or even declutching. Fingertip matching of speed to load under full power gets the job done sooner!

Exclusive TD-24 fingertip operating ease provides the operator comfort incentives and the means to give full days of full capacity cycle-speeding production!

Find out how these and all the other TD-24 production exclusives can equip you to run power circles around anything else on tracks. See your International Construction Equipment Distributor for a TD-24 demonstration!

Planet Power steering and Hi-Lo "power-crowd" keeps the TD-24 loading the "75" Payscraper® at top effective speed—adds up to increased daily yardage. Only 30 to 45 seconds needed to heap-load a "75" Payscraper—on this Dominic Leone Construction Co., Inc., Colorado road job!

production exclusives around "cycle-stallers"

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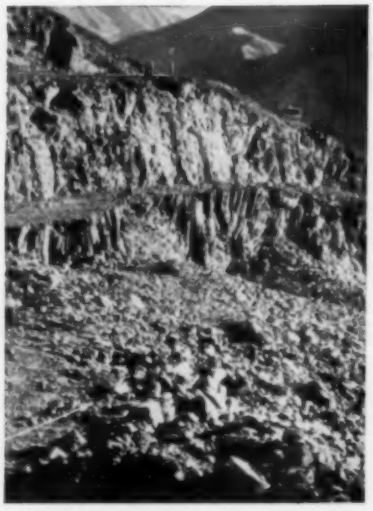
Typical shot with Monsanto's new kind of prilled NH_4NO_3

View of area involved in the blast. Shot was made in heavy columnar basalt at dam site. Used as an explosive: a new, top-quality, prilled NH_4NO_3 that Monsanto research developed to give you optimum savings, safety, speed and ease of handling.

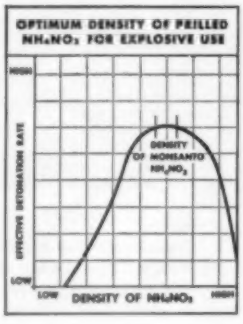
View at time of detonation. The system of detonation recommended by Monsanto, in conjunction with Monsanto Ammonium Nitrate, will yield equivalent pound-for-pound results with 60% gelatin dynamite at one-fourth the cost.

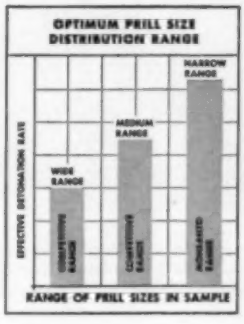


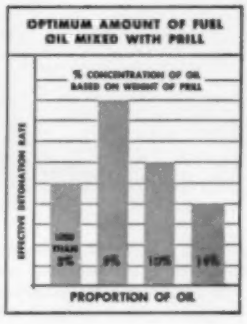
Results of blast. The powder factor in the shot above was 0.4 lbs. per cubic yard. Breakage of rock was considered ideal by contractor. Monsanto's experienced staff can give you complete technical service. Just phone Monsanto.

Photos courtesy of MORRISON-KNUDSEN COMPANY, INC.

Monsanto Ammonium Nitrate is now produced according to the specifications determined by these findings of Monsanto research. Result: more effective blast at greater savings. Monsanto is the world's largest manufacturer of prilled ammonium nitrate—and leader in developing the use of NH_4NO_3 as an explosive for open work. Request report presenting latest research findings.







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TURN PAGE

HERE'S WHY THE NEW 11-B BOOSTS YOUR PROFITS...

★ **Rugged 6x6 carrier** with 6-wheel drive and 6-wheel Hydrovac service brakes assures fast, mobile performance on scattered-job schedules. It travels at speeds up to 47 mph.

★ **Five front ends, easily converted,** provide dependable versatility for a variety of excavating and crane work.

★ **Unit assemblies,** designed for easy replacement or quick service, minimize down-time and maintenance costs.

★ **Ball bearing swing circle** plus use of anti-friction bearings to mount all moving parts on revolving frame assure long wearability.

★ **Nylon pins and bushings** in operating lever system eliminate need for lubrication. In addition, all gears and pinions in main machinery (except the swing pinion and rack) are enclosed and run in oil.

★ **Long range hoe front end** for a ⅜-yd. machine provides extra reach. New type pitch brace attachment automatically changes dipper pitch for best digging and dumping angles.

★ **Two-section cab design** includes sliding doors and hinged, removable cab panels for easy accessibility to main machinery. Roomy, comfortable operator's cab is equipped with safety glass windows for full visibility in all directions.

NOW you can enjoy unmatched QUALITY at low cost

The new 11-B Transit Machine is ready to roll extra profits your way! You'll profit from the 11-B's simple compact design; from its versatility, accessibility and low cost maintenance. You'll find the 11-B provides the speed and mobility to handle scattered jobs profitably. It is economical to operate, too.

What's more, you can now own a low-cost carrier-mounted ⅜-yd. machine designed as a highest quality product in every respect. See your nearby Bucyrus-Erie distributor for all the facts on this fast-moving new moneymaker or send for complete information direct.

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Gentlemen: Please send me details on the new 11-B.

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OVER 12,000 YDS. A DAY WITH

With 300 h.p. engines and 4 speed Torqmatic Drives, the S-18 Scrapers maintained fast cycle time in spite of the 6500′ elevation and steep return grades.

On one side-hill cut the S-18 "Eucs" loaded at the top of the cut and hauled to the toe of the fill—310′ difference in elevation!

Loaded by a 4½ yd. shovel, the 22-ton Rear-Dump "Eucs" move heavy excavation from a cut where the granite had to be drilled and shot.

Good stability resulting from the low, wide bowl design, easy hydraulic operation, and plenty of power and traction enabled the "Eucs" to get heaped loads averaging 15 bank yds. of decomposed granite in a hurry.

"Euc" Scrapers are your best investment — have your Euclid dealer show you why!

8 "Euc" S-18 SCRAPERS

on a job so tough that "scrapers couldn't be used!"

Isbell Construction Co. knows what a tremendous difference high production Euclid equipment makes on their earthmoving jobs. Thirty years ago this contractor used a spread of mule-drawn ½ yd. Fresno scrapers in building a road (now U. S. Route 50) through rugged mountain country between Carson City, Nevada and Lake Tahoe.

Today on a nine-mile section of this same road, at about 6500′ elevation, Isbell is relocating the road to eliminate hairpin curves and steep grades. Other contractors who bid the job didn't think scrapers could be used—figured their estimates on the basis of using shovels and trucks to move the more than 3⅓ million yards of excavation. But Isbell had experience with Model S-18 "Eucs" equipped with Torque Converters and knew what these 18 yd. scrapers could do on tough work.

In spite of having to work in close quarters on the mountain side, and climbing return grades as much as 27%, scrapers have moved about 80% of the yardage in cuts up to 230′ and fills to 160′. Eight of the S-18's are working 20 hours a day and on a section with a 400′ one-way haul and return with a 20% adverse grade they complete a cycle in 7 minutes. A fleet of 10 Rear-Dump "Eucs" of 22-ton capacity and three 15-ton models are used where the heavy granite must be shot and shovel loaded.

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

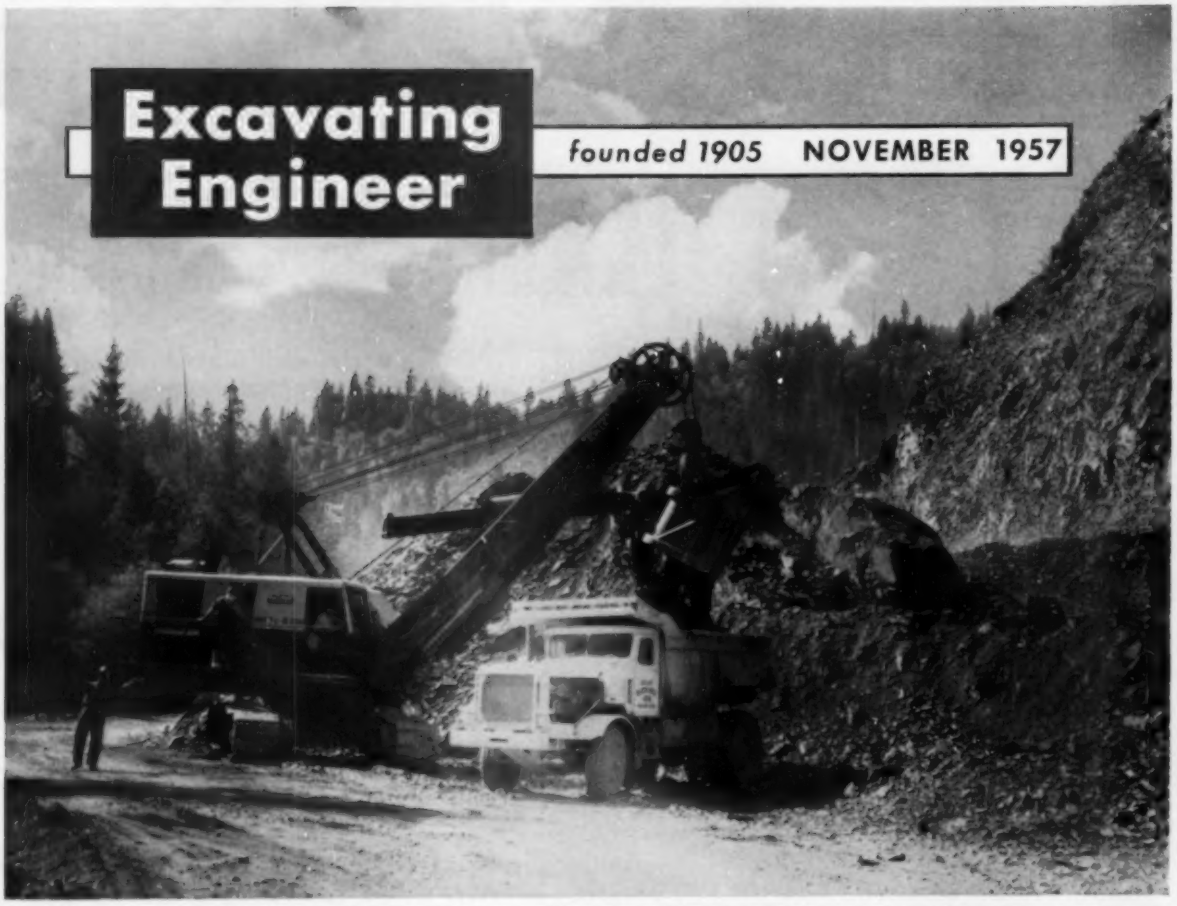
◀ Fills on the 9 mile project average 50′ to 100′ in height, with the highest being 190′—they make it possible to keep grades on the new 4-lane road to an average of 5%.

Up and down they go—the S-18 "Eucs" ▶ carry their heaped loads of 15 bank yds. or more down 400 feet of 20% grade, dump on the fill, and climb back for another load—each scraper makes 7 to 8 trips per hour.

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

Excavating Engineer
founded 1905 NOVEMBER 1957



Diesel shovel carrying 3½-yd. dipper loads rock from cut. Slate-Hall job is Idaho's first under federal interstate road program.

Idaho's Biggest Road Job

by Ray Day

IDAHO'S biggest highway contract, a $2,731,683 job through the mountains between Coeur d'Alene and Kellog, marks the start of the Federal interstate highway program in that state. In many respects the job is a "first." It's the first time a four-lane divided highway alignment has been attempted in such mountainous country. It's Idaho's first highway contract over $2 million. And the contractor's use of a 3½-yd. shovel marks a new trend toward bigger equipment in northwestern highway work.

F. H. Slate Co. and E. C. Hall Co. of Portland, Ore., were low bidders when sealed envelopes were opened last fall in Boise. In some respects Slate-Hall's competition wasn't envious. The project has difficulties galore—heavy clearing, lots of solid rock excavation, a traffic control problem second to none in the Rocky Mountains area, and innumerable channel changes where creeks run in the same canyon as the highway. It was the kind of project which dictates the best in management, men and machines in order to show a profit.

Heavy excavation in northern Idaho mountains opens way through bad bottleneck for modern four-lane highway. Size and difficulty of job set new records in state's road building history.

Historic Trail

The route location is an historical traffic bottleneck. The early pioneers had trouble with their first horse trails. Later, when it was named Mullan Trail after explorer Captain William Mullan, United States Army, it was still a hard traverse. In 1912, it was a one-way stage road. The present highway, considered ultra-modern when it was built in the 1920's, is hopelessly obsolete. Many a motorist, after speeding across Washington or Montana on U. S. 10, has known the frustration of piling into the traffic bottleneck east of Coeur d'Alene.

Slate-Hall's work will cure 7.2 miles of that bottleneck. When the work is finished in the summer of 1958, the old road will be replaced by a four-lane divided highway geared for 60 mph traffic. Maximum grade will be

5½%; sharpest curves will be 6°. To get that kind of alignment there will be rock cuts 170 feet deep, and fills up to 350,000 cubic yards. Slopes of from ¾ on 1 to ½ on 1 will be used in rock. Fill foreslopes will be 4 on 1 up to 10 feet; 2 on 1 above that elevation. All cuts will be opened as much as possible to make room for snow disposal in winter.

Initial problem was a 130-acre clearing item. It was particularly difficult because the ground cover was mixed. It wasn't all trees; it wasn't all brush. Some parts of the right of way had been logged recently; others hadn't been touched for years. And while northern Idaho has many experienced woodsmen, they all have trouble with this type of mixed logging. And the specifications were rigid regarding the importance of keeping wood and debris out of the fills.

Traditional methods were tried first. A chain saw crew felled the bigger trees; lower brush was scooped up by the dozer blades of Cat D8's and D9's. But too much debris was being buried in dirt. When it showed up later on the fill, it sometimes had to be removed by expensive labor crews. What was needed was a cleaner method of grubbing and clearing on the initial pass.

General Superintendent J. N. Leinbach found the solution in professional loggers and their equipment. Four truck-mounted jammers were rented from local loggers. Their owners and logger-workmen were hired on Slate-Hall's payroll. And costs went down immediately.

Quick, accurate spotting of this Gardner-Denver DH-123 drill is made possible by its mounting on a Joy hydraulic boom. A Gyro-Flo 600 compressor provides power.

Powerful action of a Cat D9 U-dozer with Ateco hydraulic ripper removes tough unclassified material in a hurry.

Truck-mounted jammers are simple winch-operated machines which operate from stands on dozer-pioneered roads. Each rig has a timber boom, a multiple-drum hoist driven by the truck engine, guy lines for holding the rig firm while hoisting, and various tong-equipped haul-in lines. These bring in the brush, logs and stumps.

The hoist lines on these machines are effective for skidding over a radius of several hundred feet. From one stand a jammer can pick everything clean, bring it quickly to a stack for burning and move on to another stand. Working in conjunction with dozers and chain saw crews, the machines speeded clearing by at least 50% while dropping the cost per acre.

Most of the material was burned on

the spot, but there was some selective logging of usuable timber. Cedar fir and spruce salvaged in that program were sold to local lumber mills.

Connected with highway clearing was a smaller side job which Power City Electric Co., Spokane, Wash., did for American Telephone & Telegraph Co. Construction of the highway made necessary the movement of a pole line which carries telephone wires from four companies, television cables with major programs for the Pacific Northwest and telegraph lines. So important were the lines that they had to be moved without interfering with a single telephone call. In fact, the contract carried a $200 per minute penalty clause if anything went wrong.

Power City Electric Co. has moved many a line under just such conditions, so this was nothing new. Chain saw crews and dozers carefully cleared the way for the new line, and trees close to the old one were removed under constant skilled supervision. One problem remained—burning. Humidity was high and rain fell every week in early spring. Fires started by diesel fuel in brush piles went out before the brush would ignite.

Access road systems, laid out as above, were used in clearing the right-of-way. Chain-saw gangs felled the bigger trees; D8 and D9 dozers scooped up the brush.

To whip that problem, a large 500,000-BTU butane burner was built. It was mounted on wheels, but was small enough that it could be moved by two workmen. Two smaller outfits of half that capacity, which men could move around alone, also were built. Filled nightly with butane from a tank at the headquarters shop, these burners operated from $2 per day against $15 per day for the diesel fuel method. And much surer burning was done with butane, which seemed to start fires better than heavy diesel fuel.

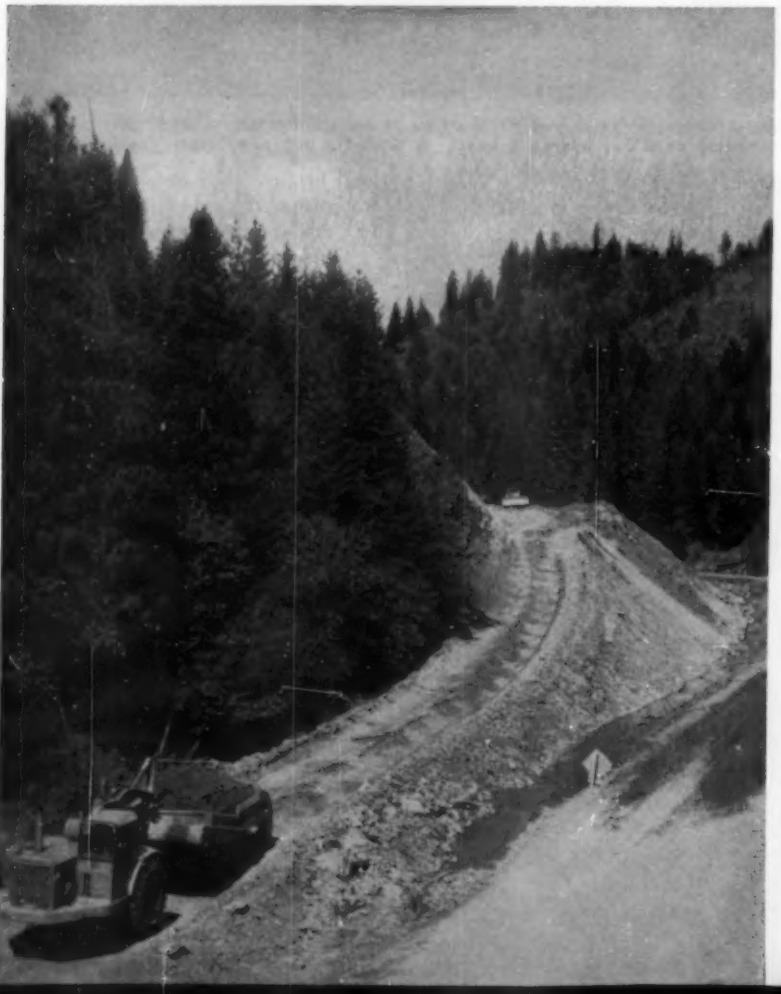
Heavy Rock Excavation

Of 1,700,000 cubic yards of grading, an estimated half is in rock so solid it requires drilling and shooting. Most cuts are deep. Many taper down to thin slivers. This, of course, makes access difficult for pioneering and drilling equipment.

Slate-Hall's answer to that problem comes in the form of four Caterpillar tractor-mounted Gardner-Denver 123 drills, and one Gardner-Denver 123 on an Air Trac carriage. Two of the Cat-mounted machines have 500-cfm compressors (one a Gardner-Denver, the other a Joy) mounted so they are driven by the tractor engine. Their drills operate from a Joy jib-type mounting. These machines are the ones used when access is difficult and the maximum in flexibility is needed to get into a drilling location.

The two other tractor-mounted rigs have Ingersoll-Rand 600 Gyro-Flo compressors, independently powered, mounted on the rear of the tractor. Joy jibs are used also on these machines, along with Gardner-Denver DH-123's for drilling. Because of the extra weight on these rigs, they lack a few percentage points in maneuverability, compared to the other rigs, in drilling steep locations.

Excessive breakage of drill steel was one of the first bad problems. At least once a shift, somewhere along the strung-out job, a piece of drill steel



Fully loaded, a Cat DW21 roars downhill from an unclassified excavation cut.

When fires started by diesel fuel in wet, soggy piles of debris refused to burn, these portable butane-fired burners quickly dried up the air and whipped the problem.

broke. Usually it happened in the threaded shank. Valuable time was being lost. Too, drill steel isn't cheap, and it's so hard it couldn't be rethreaded.

Acting on advice from Gardner-Denver, Slate-Hall's management ordered some of the new Series 700 Gardner-Denver jointed steel, to replace the type previously used. Series 700 steel has heavier threads and is especially recommended for hard, tough drilling. When *Excavating Engineer* visited the job the Series 700 steel had been in use on all machines for over a month, and breakage had stopped completely. In all that time, after drilling thousands of feet, only one piece had snapped.

Timken tungsten carbide drill bits 3½ inches in diameter are being used. These bits have a Series 700 thread and can be screwed directly on the special steel. Some experiments were also being made with Brunner & Lay bits of the same size, using a 600 thread on the bit and a 600-700 adapter to make the steel connection. The bit which required no adapter gave the best footage, because it was unhindered by friction loss from an adapter. It often accounted for footage in excess of 12 inches a minute.

Improve Breakage

Drill holes up to 60 feet deep are being used, but best results have come from 30-ft. drilling. Since extensive shooting hadn't been done in this particular rock, a short period of trial and error was necessary. One of the first shots had an 18x18-ft. hole pattern. When the shot was pulled, it rolled out great blocky chunks which made hard work for the shovels. When the hole centers were closed up to 12x12 and 14x14, breakage was much better.

Two conditions have made shooting difficult. The rock is saturated with ground water in many places; so, gelatin-type Pacific 40% powder must be used. The area is also subject to frequent lightning and thunderstorms. Lightning isn't exactly compatible with dynamite and electric caps. Further to complicate the situation is the ground itself. It contains silver ore and other excellent conductors of electricity. So the shots have to be loaded fast, in small batches, and shot promptly while the weather is good. Too many cases of lightning-triggered

Continued on page 56

A truck-mounted log jammer, one of four units rented from logging outfits, works on an access road piling up brush and logs.

Ed Hummel Beefs Up Strip Reclan

IN the rolling hills near Harrisville and Grove City, Pa., about 60 miles north of Pittsburgh, open pit coal mining and Hereford cattle-raising go hand in hand. At least they do for congenial Ed Hummel, owner of Grove City Construction Co. Since its organization in 1946, the company has devoted almost all of its efforts to coal mining. It has opened and completed 20 different pits within a 20-mile radius of Harrisville, where the main office and domestic tipple are located.

With the considerable land reclamation that follows such scattered stripping operations, Hummel not only reclaimed the acreage but turned to cattle raising in 1952 to maintain the value of the land.

Equipped with a 5-yd. bucket, this dragline strips an average of 300 cubic yards of overburden per hour in Grove City Construction's mines. Much of overburden is rock.

150-Head Herd

To start, he purchased 25 head of registered polled Hereford cattle. Today, the herd has increased to more than 150 head. The herd is raised on Hummel's extensive farming and grazing land, known as Valley View Farms, covering approximately 1,600 acres in Mercer, Marion, Cherry, Venango and Clinton townships. Five herd bulls are in constant use, representing the finest blood lines of the breed.

Hummel now owns 14 farms in the area. They are managed by Bob Williamson of Harrisville. Williamson, who has worked for Hummel since 1953, has three assistants.

Two years ago, Hummel proved that cattle-raising was more than purely a land reclamation activity by showing the Grand Champion Female—O'Rose Domino 79th—at the Pennsylvania Farm Show at Harrisburg. The prize-winning Hereford also was first place summer yearling heifer at the 1955 National Polled Hereford Show at Columbus, Ohio.

Hummel currently is operating two new pits, opened in April—one at Murrinsville; the other on the Wheeler-Younkin farm in Butler County. Each is about 7½ miles from Harrisville. The Murrinsville operation covers 860 acres, all owned by Hummel. The Grove City firm has leased some 90 acres on the Wheeler-Younkin farm.

Although yardage records are not available, Hummel explained: "We've moved considerable millions of yards of overburden and have hauled out an average of 80,000 to 120,000 tons of coal annually, dependent on the weather and the type and depth of overburden."

One seam of coal—the Brookville—is being worked at the two pits. This seam has an average thickness of 36 to 42 inches. The coal is of particularly good quality with a very hard structure and a high BTU value. It contains approximately 3% sulphur—about average for the area.

"Oddly enough, the coal seam does a lot of rolling—rises and dips as much as 50 feet," Hummel said. Elevation at the two pits varies from 1,200 to 1,350 feet above sea level.

30 Feet of Overburden

The average depth of the overburden is 30 feet—in some places only 10 feet of dirt is present. In others, the coal lies 50 feet under rock and earth. Hummel's crew currently is encountering a typical formation in the area: topsoil and light clay for about eight feet; heavy clay for four feet; 6 to 15 feet of laminated rock; and 2 to 12 feet of solid white sandstone. Unusually heavy rainy seasons create a problem. The wet, sticky mud frequently slows up, even stops, coal loading. Hauling units can't get into the area through the knee-deep ooze. When visited by *Excavating Engineer* in May, the Grove City mining company had stripped 300,000 cubic yards of overburden from the Murrinsville pit, and more than 200,000 yards from the Wheeler-Younkin pit. Approximately 65% of the above yardage represents rock and other tough mate-

Grove City Construction Co. devotes almost all of its efforts to strip mining coal in Pennsylvania. Its owner, Ed Hummel, uses the reclaimed acreage to raise herd of beef cattle.

ıtion Chore

This D8 bulldozer is used to remove topsoil ahead of the dragline and to maintain haul roads. Another job for the dozer is to level spoil for immediate reclamation.

rials. Hummel estimates that 10 million yards remain to be stripped from these two pits. He figured the life of the Murrinsville operation at three years; at Wheeler-Younkin, one year.

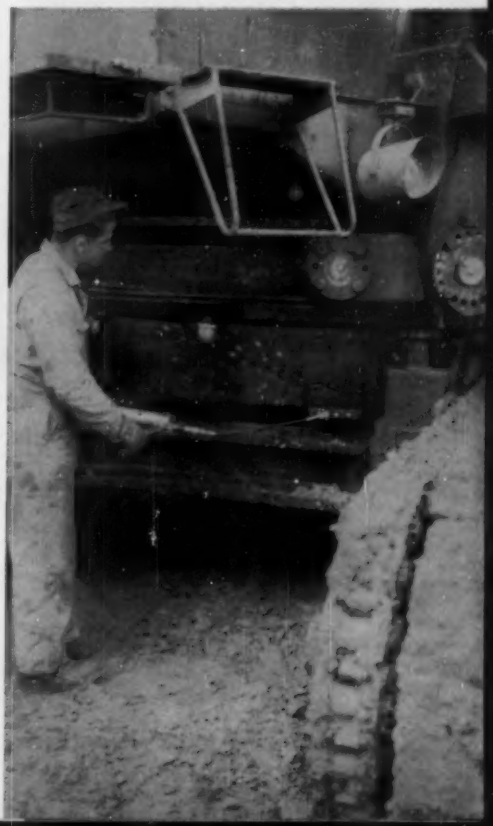
In stripping the two pits, Hummel used two diesel-powered Bucyrus-Erie draglines—an 88-B at Murrinsville and a 54-B in the smaller operation. The machines are equipped with 5-yd. and 2¾-yd. buckets, respectively. The average output of the 88-B is 300 cubic yards per hour, or about 2,700 yards per each of two 9-hour shifts. The 54-B removes overburden at a rate of 175 yards per hour, or 1,575 yards per shift.

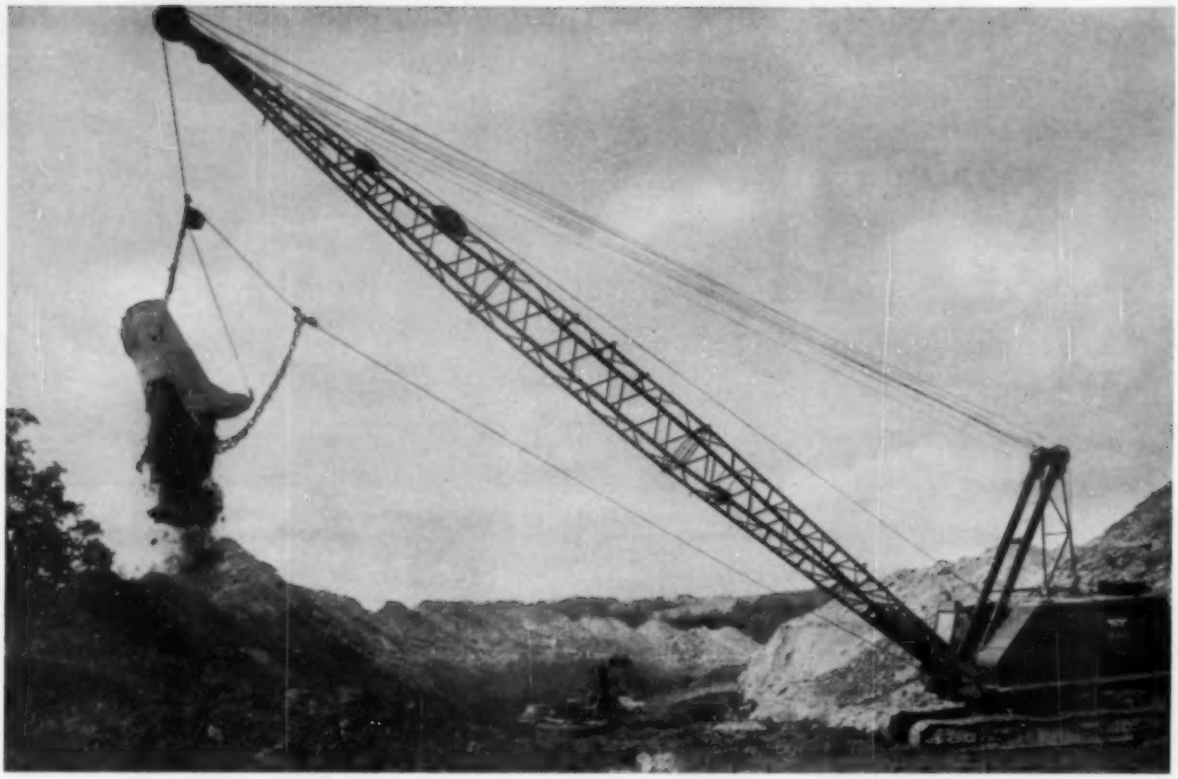
Hummel occasionally, as needed, uses a Caterpillar D8 tractor with a 10-yd. Bucyrus-Erie Carryall scraper to remove topsoil in advance of the dragline. Normally, however, at Murrinsville, a D8 bulldozes the topsoil, averaging 100 yards per hour. It also is assigned the job of leveling spoil piles for immediate reclamation. A Cat D4 tractor is used as a hauling and service tool for miscellaneous work. At Wheeler-Younkin, an International TD-18 bulldozer strips and levels; another D8 assists in leveling.

Because much of the overburden consists of rock and other tough materials, Hummel employs both vertical shot rock drilling and horizontal high wall drilling. Vertical drilling is contracted out to Jim Tyger, New Bethlehem, Pa., who operates a Davey truck-mounted cable tool drill. Using Timken rock bits,

That's a load of shale in the 88-B's 5-yd. Bucyrus-Erie bucket. Average depth of overburden in Grove City's two current mines is 30 feet, with some running about 50 feet.

Oiler Bob McFeaters lubricates the lower machinery of the 88-B as dragline works.





(Above) Grove City's other stripping dragline is equipped with 2¾-yd. bucket. (Below) A 1½-yd. shovel loads coal.

the rig puts down 5½-in. holes to a depth of 10 to 30 feet on 17-ft. centers. It takes about three to five minutes to move and set up per hole.

For horizontal drilling, Hummel uses his own Hardscog high wall drill, equipped with 5-in. auger, to put in 60-ft. holes. Augers are changed only twice a year, each time rebuilt to original size.

Blasting is a once-a-week operation, normally assigned to an afternoon. It takes about four hours to load and shoot. Atlas explosives, combined with 33⅓% nitrogen fertilizer, are used. Atlas detonators are fired by a 50-shot battery. Horizontal holes are charged with 150 pounds of the explosives. Depending on the pattern used, a shot accounts for approximately 450 yards of rock to the hole. In the more shallow vertical holes, each one is loaded with 1,000 pounds of Atlas explosives and 50 pounds of fertilizer, along with a 5-lb. gelatin primer. The breakup here is about 100 yards to the hole. The number of holes shot at one time varies up to 68, but normally averages about 35 vertical and 12 horizontal. Fragmentation generally is good. Occasionally, an air compressor and jackhammer are brought in for secondary drilling.

Bulldozers Clean Seam

The coal seam is cleaned with the D8 and TD-18 bulldozers. Secondary and final cleaning is handled by a Galion 102 power grader.

In the two pits, coal loading is assigned to diesel-powered Bucyrus-Erie 38-B's, each equipped with a 1½-yd. dipper. They load out a combined average of 600 to 750 tons per 8-hour shift; the output is minimized by long truck hauls. The distance to both the domestic and railroad tipples now is about 7½ miles from each pit. One-way hauls take up to 30 minutes over hilly, but good, haul roads.

Hauling units, leased from trucking contractors in Harrisville and Grove City, include seven 15-ton capacity Reo and International tandems with hydraulic dumps. They average about 80 to 100 tons each per 8-hour shift.

At the domestic tipple, coal is pro-

cessed into five sizes—¾ minus, stoker, nut, egg and lump. No washing or treating is done, but hand cleaning is handled on picking tables. The tipple capacity is 750 tons per 8-hour shift.

For shipment from the railroad tipple, coal is crushed to the customer's specifications. The railroad siding has a capacity for 10 empty cars. A 75-ton car can be loaded in 35 minutes.

Some 70% of the coal is shipped by rail exclusively on the Bessemer & Lake Erie. The other 30% is shipped by truck. Shipments are made to Erie and Sharon, Pa., Cleveland, Ohio, and various Canadian ports. Included among the firm's best customers are Valley Camp Coal Co. and W. H. Warner Coal Co., both of Cleveland.

Road maintenance for Hummel's scattered pit operations are handled by the Galion 102 grader and the D8 and the TD-18 bulldozers. Stock coal at the domestic tipple is loaded by a Model 175-A Michigan high lift.

Two-Shift Stripping

Work shifts at the two pits are: stripping, two 9½-hour shifts, six days a week; loading and hauling, one 8-hour shift, four to six days a week; drilling and hole loading, one 8-hour shift as needed.

Hummel employs no special maintenance crew, but Tom Anderson of West Sunbury, Pa., an excellent welder and equipment operator, is assigned most of the welding jobs. Carl Potter of Harrisville is the master mechanic.

Five sizes of coal are chuted from this domestic tipple near Harrisville, Pa. Grove City Construction's mines produce an average of 80,000 to 120,000 tons per year.

Don Gibson of Harrisville is superintendent of operations. He has been with the company for eight years. He is in direct charge of 25 employees, 14 of whom are assigned to the pits.

Although no special safety program is employed at either pit, periodic checks of all equipment and facilities are made by Potter. Standard safety points and state regulations, of course, are rigidly followed. "This arrangement has proved very satisfactory to all concerned over the years," Hummel said.

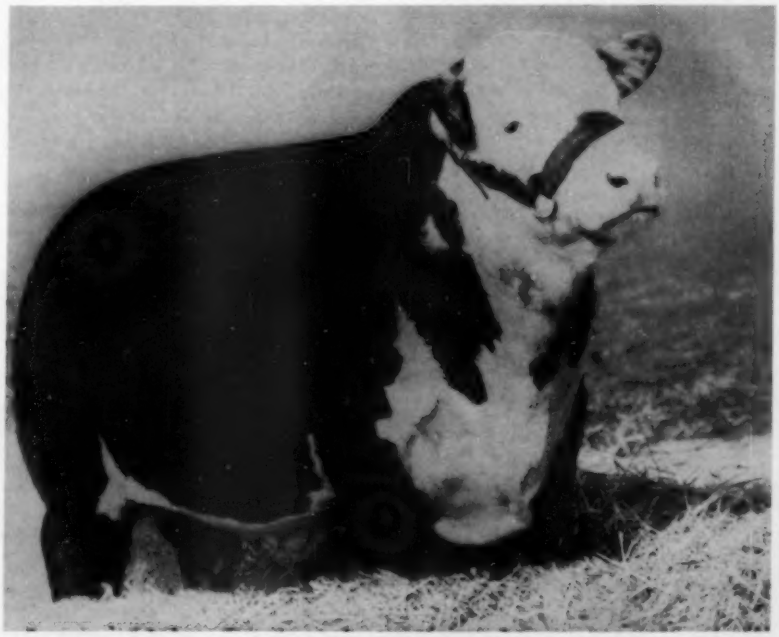
At his office in Harrisville, Hummel said: "We have very favorable freight rates to the Erie and western New York industrial areas. We also enjoy favorable rates on shipments to the lake ports served by the Bessemer & Lake Erie railroad.

"The future of the coal business here, as well as in other small and big operations," Hummel continued, "is very dependent upon the industrial economy of the country. There has been a noticeable decrease in domestic coal demand in this area, and that is due primarily to keen oil and gas competition.

"There's a lot of competition for coal profits here in Pennsylvania—there are

Continued on page 62

Hummel (right), a former Seabee, is shown with Master Mechanic Carl Potter.



With the land reclamation that follows strip mining, Grove City Construction's owner, Ed Hummel, turned to cattle raising. This is Myrtlewood Larry 6, senior head sire.

(Left) A 1-yd. dragline loads gravel into Ford-Fruehauf unit. (Right) Junior Tandem plant is loaded by 1-yd. dragline.

McRee Gets Things Done at Cordova

JOHN L. McREE, a bespectacled, good-natured Tennesseean with a winning Southern accent, gives the impression that he's the type of fellow who works hard and gets things done.

Get things done, McRee does. He's used to it. He entered the army as a private in World War II and came out five years later as a major in the combat engineers. Called back during the Korean hostilities, he served an additional two years.

Now his talent for getting things done is directed wholly to the successful business he and two other men founded four years ago. The business is the Cordova Sand and Gravel Co., Inc., Cordova, Tenn., a suburb of Memphis. Paul Davis and Bob Guinn, both of Savannah, Tenn., were the other two founders. McRee is president, Davis is vice president and Guinn is treasurer.

Cordova Sand and Gravel's operations can be divided into two categories: 1, washing sand and gravel for redi-mix plants and producing gravel for asphalt operations; and 2, grading, drainage and base work for state and county highway departments.

Cordova's operations generally range in a 40-mile radius of the home base, but the range is greater for jobs that are large enough to warrant the move. Cordova is licensed to bid highway work in Tennessee, Arkansas and Mississippi. The company has approximately 15 sand and gravel pits in the Memphis trade area, plus additional pits in Arkansas and Mississippi.

Cordova crushes gravel to specifications size, McRee said. It furnishes sand and gravel to redi-mix producers, Shelby County (Memphis) commissioners and highway projects in three states. Much crushed gravel for state highway asphalt plant operations comes from Cordova's pits.

Highway construction accounts for the largest share, money-wise, of Cordova's business. In 1956, for example, Cordova completed 35 miles of highway work. These included 12 miles of base at LaGrange, Tenn., for the state; 15 miles of widening and gravel base for Shelby County; and 10 miles of grading,

This bulldozer is shoving overburden into a water-filled pit. Generally, about 10 to 12 feet of overburden is found in Cordova's pits, covering 20 feet of gravel.

Former army major directs successful sand and gravel business in Memphis suburb.

Working in one of the pits where a wall had sloughed off, a 1-yd. dragline builds up a narrow section of the haul road.

drainage and base in Tate and DeSoto counties, Miss., for the state. One of the 1957 contracts was for 48 miles of widening and gravel base for Shelby County.

"We've been here for five years, and it's good for 10 or 15 more years, said McRee as he surveyed his Cordova setup for *Excavating Engineer*. "We have 1,000 acres under lease.

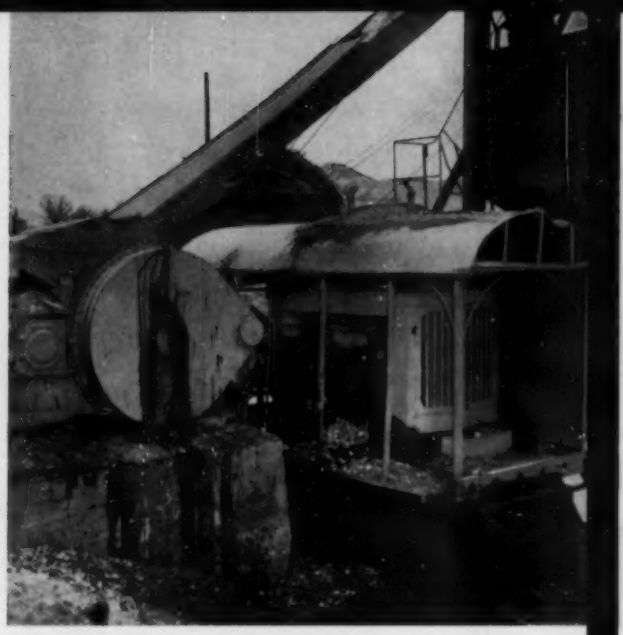
"Generally, we find 10 to 12 feet of overburden in the pits. Under it is about 20 feet of gravel. We try to put the overburden in the hole behind us as we advance in the pit."

A Heil C10 scraper is used for the initial opening of a pit. Draglines and bulldozers follow.

Cordova has six draglines and shovels for pit and plant work. "We're the only operator in this vicinity using a shovel to load at the bottom of the pit," said McRee.

The excavator group includes three

(Above) Gravel is spread in a trench by a Cordova dump trailer. (Below) The Master Tandem plant is charged by dumps.



(Left) Grader spreads gravel and Farmall pulls compaction roller. (Right) International diesel powers the roll crusher.

Bucyrus-Erie 22-B draglines. with 1-yd. Hendrix LS buckets. McRee plans to convert one of the 22-B's to a ¾-yd. shovel front for pit operation. Two of the 22-B's have GMC 3-71 diesel engines; the other is powered by a Caterpillar 318 diesel.

Another dragline, a Koehring 304, has a 1-yd. Hendrix LS bucket. This machine also is powered by a 3-71 GMC. A Koehring 205 shovel with a ½-yd. bucket loads out stockpile. It has an International UD-9 diesel. A Northwest 25 shovel, powered by a GMC 3-71, loads material for the plant.

Bulldozer Lineup

The bulldozer lineup includes an International TD-24, a Cat D8 and a Cat D7, plus an Allis-Chalmers HD-5 front-end loader. McRee had Cordova's shop fashion a large curved blade especially for the TD-24, which is engaged in stripping.

Current for the wash plant operation at Cordova is provided by a 100-KW generator pulled by a 220-hp Cat D17000 engine. Gravel is dumped into a slush pit, from which an 8-in. Pekor suction pump (powered by a 160-hp GMC 6-71 engine) kicks it up 40 feet to the top of the plant for screening. The oversize is sent through a 40 x 24 roll crusher, then returned on a closed circuit for further screening on the Cedarapids plant. The roll crusher is pulled by a 180-hp International UD-24 diesel.

The sand is flumed out to a pool, where it is rehandled by a 6-in. Pekor pump driven by a 6-71 GMC engine and moved 500 feet to worked-out pits being utilized as storage areas. McRee hopes to reclaim the sand for later use.

McRee recently purchased an Eagle 30 x 18 coarse material screw washer to make specifications material.

Water for the wash plant comes from a 12-in. well with a flow of 1,200 gpm.

"Our season is March through early October," McRee said from the comfort of his office on a rainy day last March. "We try to build up stockpiles of small crushed material in the winter. We're contemplating a lot of work on the Memphis expressway system and some state highway work."

McRee was waiting for the weather to break—March had been an unusually wet month—to send his Cedarapids Mater Tandem crushing plant to Brunswick, Tenn. There it would produce aggregate for a contractor who had a contract for widening and reinforcing State Highway 70.

The Master Tandem plant is pulled by a Murphy ME-650 diesel engine which sits on a separate truck. With a 10 x 36 jaw crusher and a 40 x 22 roll crusher, the master tandem can produce 1,600 tons of crushed material under perfect conditions, McRee said. The clay content of the pit is the determining factor in production.

Ford-Fruehauf Units

Cordova's rolling stock includes 12 and 13-yd. Fruehauf dumps pulled by Ford F-7 and F-8 trucks; pickups and lowboy trailers. The Ford-Fruehauf units are used for hauling from pit to crusher and crusher to asphalt plant and also on highway construction hauling. The majority of Cordova's other hauling is done under contract.

Three 13-wheel rubber-tired rollers (two Bros and one Tampo) are used for highway construction work. They are pulled by Farmall M-9 and Cat D6 tractors. Two Caterpillar No. 12 motor graders also work on highways.

Five water tankers ranging in capacity from 1,000 to 4,000 gallons are supplied with water from the numerous 6-in. pumps at Cordova. These pumps are also put into service for dewatering.

McRee keeps in touch with his jobs through a Motorola two-way radio system with eight mobile units. Wheeler Whitlow is the dispatcher.

Cordova Sand and Gravel employs about 60 persons at the peak of the season and 20 during the winter months. Ovie Hughes is superintendent of the Cordova wash plant and shop. His wife, Mary, is office manager.

A former major in the combat engineers, John McRee directs Cordova operations.

Hurry - Up Flood Control Channel

by Floyd Suter Bixby

A 54-B dragline with 3-yd. Esco bucket excavates the channel of a structure designed to handle floodwaters of a watershed area in the San Gabriel Mountains.

Tight time schedule and pencil-sharp bidding dictate use of the very best excavation and concrete methods by California contractor on seven-mile reinforced-concrete flood channel job.

ALWOOD Corp., Altadena, Calif., is a construction firm not afraid to tackle a tough contract.

Consider, for example, the $2,610,000 Corps of Engineers flood control contract which Alwood Corp., is completing near Monte Vista in southern California. The firm's bid was $300,000 below the engineer's estimate; $130,000 low in relation to the nearest bidder. Because the project was designed for flood control betterment on San Antonio and Chino creeks, there was such a tight limit that Alwood was scheduled to finish seven miles of reinforced-concrete channel—excavation and concrete work—in slightly more than six months.

Flood control projects always are tricky, and this one is no exception. No one knew exactly whether oversize boulders lay in the way of excavating equipment, or whether ground water might be a problem.

Despite the combination of tight time and low prices, the job jumped off to a running start and has stayed that way ever since. Excavation, the key item in planning concrete work for early completion, hit sustained scheduled production in a matter of hours after the equipment was moved in. For, only by working excavation fast can the ambitious concrete schedule be met.

From the point of view of the people who live in the coastal plain below the San Antonio Creek watershed of the San Gabriel Mountains, the job is literally a lifesaver. San Antonio and Chino creeks, fed by flash downpours during

Dragline hoists a payload of material almost to the point of its 60-ft. boom for dumping. A Cat D8 dozer then levels spoil pile.

(Left) Loose material dumps easily. (Above) Cat DW 21 scraper assisted by D14A pusher takes out the upper part of ditch.

the winter rainy season, have often overtopped their banks to devastate homes in Monte Vista, Claremont and Pomona. Prado Dam was built near Corona, on the Santa Ana River, in 1939-41, but the reservoir has no effect other than storage on the floodwaters of tributary streams like the San Antonio and Chino.

Drain Watershed

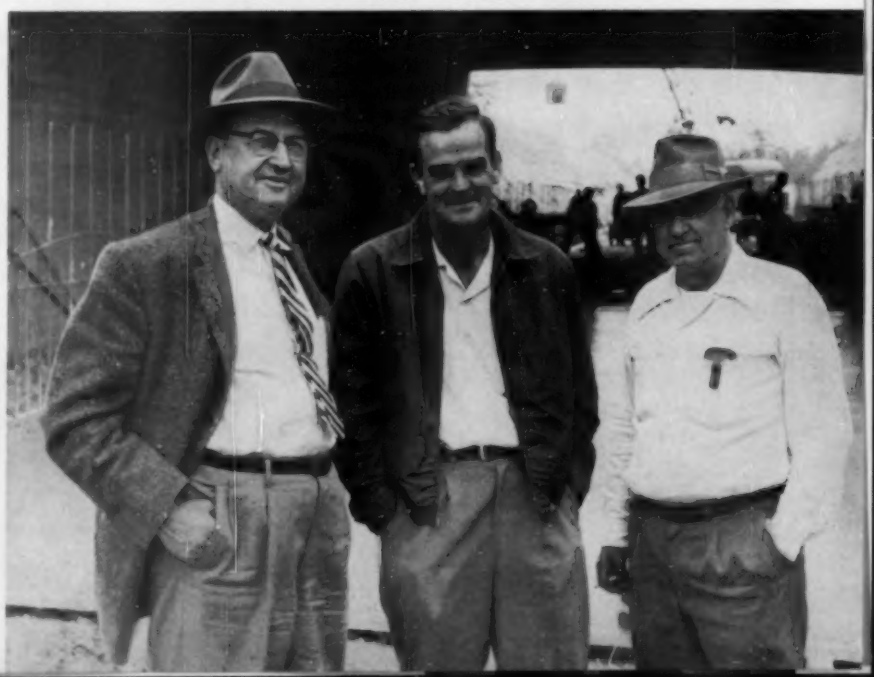
Recently finished was San Antonio Dam, an earthfill barrier at the mouth of San Antonio Canyon. The reservoir impounded here will control floodwaters coming down directly from the watershed. A reinforced-concrete connecting channel between the dam and Prado Dam reservoir is an obvious connecting link. Last year a sizable segment of this channel was constructed in the Pomona area, reaching north to Holt Avenue, near Monte Vista. The Alwood contract will close the gap between that point and San Antonio Dam, with the exception of a 400-ft. piece still held in abeyance while right-of-way negotiations are completed. The remaining piece will be built later by future contract work.

Alwood's contract plans called for building a reinforced concrete channel in 20 and 25-ft. bottom widths. Design is typical in each case. The average channel grade is .035. Wall heights range from 10 to 13 feet and average 12 feet. The concrete walls are a uniform 12 inches thick and are not tapered. The concrete invert, or floor, is 12 inches thick. It is heavily reinforced with steel bars which dowel up into the walls, and make construction monolithic.

The channel will be finished with a fence on each side for safety, and excavation from the site will be used to build up neat berms along each side. Approximately a mile of backfill near the lower end will be compacted. The remainder is to be placed uncompacted.

In planning the excavation, Alwood allowed about eight feet for working clearance around the concrete. On a 25-ft. channel, for example, excavation

O. H. Ochsner (left), representative of the Corps of Engineers' Los Angeles office, confers with Project Manager Art Murphy and Resident Engineer Jack Maxwell.



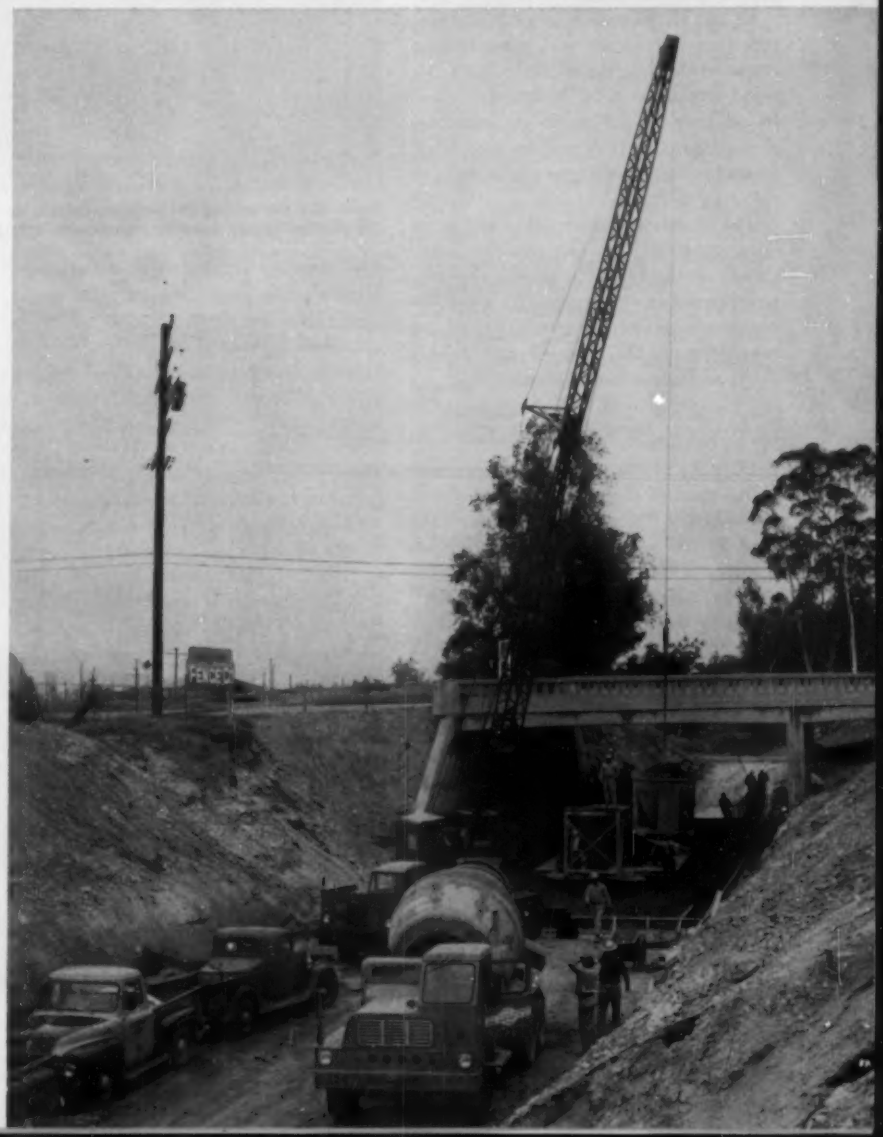
(Above) Here's what dozers pioneering the location of the channel had to handle. Huge gneiss boulders deposited in the alluvial bed in past ages are shunted aside.

was 33 feet wide. Side slopes were 1 on 1. The channel passes through typical alluvial fan formations, sloping off from the foot of the mountain slopes, and the gravel, sand and boulders will stand fairly well on that angle of repose.

With 550,000 cubic yards of excavation in the job, Alwood's management had to plan carefully in order to develop the necessary production speed. If excavation could be finished in 50 working days, it would allow sufficient construction time for the much slower concrete work. That meant setting up equipment capable of moving 11,000 cubic yards a day.

On Alwood Corporation's equipment roster was a fleet of Caterpillar equipment—tractors, dozers, DW21's. This equipment had been used by Alwood's associate firm, Kirst Construction Co., in subdivision grading. Two DW21's from this fleet were sent from Altadena to the Monte Vista job. With those two DW21's went five D8 Cats with dozer blades, a D6, and a special D14A seven-roller tractor. The latter was planned for fine dozer work and for clearing. In setting up the tractor fleet, Alwood's management planned to use this equipment for clearing and early-stage excavation.

Deeper excavation, however, was obviously a job for dragline casting. Large-size draglines could cope with big boul-



Assisting on a pour under a bridge is a Lorain MoteCrane. A GarBro bucket takes concrete from Challenge truck.

ders if they were found, could dig the material economically, and could fulfill production schedules day after day. In selecting the bigger draglines, Alwood purchased a new Bucyrus-Erie 54-B and a used 54-B. Equipped with 60-ft. booms and 3-yd. Esco medium-weight buckets, the 54-B's were planned for a production of 2,500 cubic yards per shift per machine. The 54-B's with their long booms had a singular advantage—they could set in the middle of the channel ditch, reach both slope lines easily and excavate the ditch prism in a single pass.

Companion draglines included a new Bucyrus-Erie 38-B with a 1½-yd. Esco bucket and a used Lima 801 machine. These two draglines were figured for 1,500 cubic yards per day performance. While they could also dig the ditch prism in one pass, it was slightly more efficient to dig half the material—from the center line through one slope—in a first pass; then to crawl forward and over to get the remaining half.

An auxiliary machine capable of doing structure excavation and miscellaneous crane work also was needed. Here Alwood settled on a 22-B Transit Crane. In addition to its work on structure excavation, the 22-B will be used later, when concrete work gets under way, to move form panels.

The production potential of the draglines, coupled with the yardage available from the DW21's, assured the necessary speed in excavation. As a further concession to over-all speed, the job was organized on the basis of five 9-hour shifts and one 8-hour Saturday shift.

Three Phases

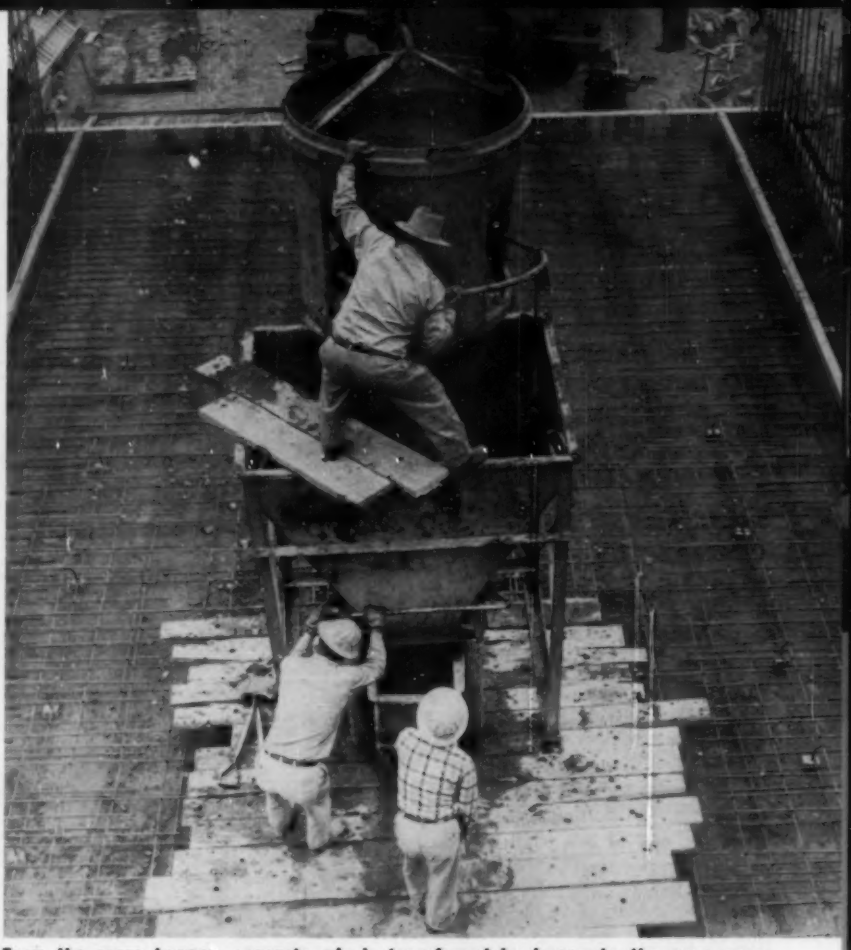
Digging production by the four machines reached the rate scheduled almost immediately, and stayed there. The method of operation follows this sequence:

1. Clearing dozers work out in front, stripping brush, shoving boulders aside, and tearing up the asphalt pavement of an old Los Angeles county flood control district channel built many years ago along the same streambed.

2. The top portion of the ditch prism then is dug off by DW21's, and the material is wasted on spoil banks on either side of the channel.

3. Draglines then follow up in four distinct spreads, spaced out far enough so they cannot interfere with each other.

Boulders in the formation have been a problem chiefly to the pioneering-clearing dozers. In ages past, floodwaters from the watershed moved granite and gneiss boulders down the channel, leaving them embedded in sand, gravel and cobbles. Usual practice when the big boulders lie near the ground surface is to dig around them with a dozer, and when two sides are undermined, to shove them aside. Some of the big boulders are as large as a tractor, so it sometimes is necessary for two machines to team up to get an oversized rock out of the way.



From the surge hopper, concrete mix is transferred by buggy to the pour area. On straightaway sections, concrete will be poured by a long-boomed road paver.

The two DW21's are being used to good advantage in excavating the top portion of the ditch prism. These machines are not being used generally where large boulders occur. To get good production from these units, they are used with pusher tractors in areas composed of sand, gravel and smaller cobbles. Also, the scrapers stop digging when they reach the point where it would boost expenses to continue their use. As a general rule, use of the scrapers stops after the top six feet are removed.

The average depth of ditch excavation is approximately 14 feet, and the remaining portion of the excavation

An example of the firm's excellent equipment upkeep practices is demonstrated by this oiler waxing the cab of his crane.

then is removed by draglines. The 54-B's dig from a center position on the ditch center line, reaching both slopes and the center prism. The smaller 38-B and the Lima 801 do their excavating by digging half the section for about 40 feet; then moving back to pick up the remaining half. Fine grade is prepared by tractor dozers which work with each of the draglines. It is desirable to carry this finegrade as close to finished tolerances as possible, so that labor work can be held to a minimum when the concrete channel floor is poured.

Finegrading around the draglines is done by referring to precisely set bluetops every 50 feet. The dragline buckets finish the grade to within about 0.3 foot of final grade. On the last pass, the dragline operator combs through the top of the material with his bucket teeth. This screens out any large rock remaining. That makes it possible for the blade operator to finish the finegrade to within 0.1 foot. Material graded by the dozer blade is shoved ahead to the toe of the prism, where the bucket can pick it up on its next pass.

One of the tougher conditions of excavation in this channel is the necessity for high hoisting of the excavated material. When a loaded dragline bucket comes in to the fairlead, it must be hoisted almost to the boom point sheave for dumping. High hoisting speed on the new machines has enabled production schedules to be met. The new 54-B dragline is equipped with a Buda diesel engine and torque converter. It is fast, particularly in swing and hoist.

Miscellaneous structural excavation is performed by a Transit Crane–mounted ¾-yd. dragline. Here it mucks out a pipeline relocation trench along a nearby highway.

Material dumped by the draglines is shaped into a neat top berm as the work progresses. The only exception to this was an 18,000-cu. yd. block, which was loaded into Mack dump trucks and hauled to balance another section. The same Caterpillar dozer which does finegrading on the channel floor also helps to shape the dumped material at the side berm. That's a full-time operation, too, because the draglines swing continuously.

The excavation sequence was worked out the safe way. In other words, excavation began at the lower end of the job and worked toward the upper end. In that way, if ground water had been a problem it would have drained away from each machine instead of into the bank. Fortunately, because of repeated dry winter seasons, the channel was free of ground water. It was unnecessary to bring in pumping equipment. But many a similar flood control channel job in the past has run into that problem, particularly on the Los Angeles River. Freedom from that problem was one of the unexpected breaks.

The same organizing-for-speed policy on excavation also pervaded early stage concrete work. Alwood Corp. has planned its concrete work around time-saving methods and proved equipment.

For example, the 12-in. invert, or

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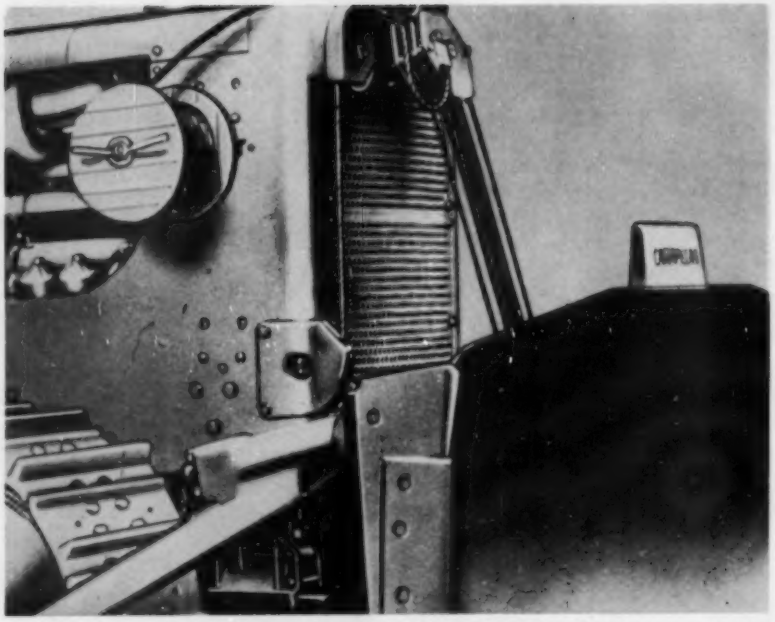
How to Lengthen Cable Life

by J. B. Sinclair
Service Department,
Caterpillar Tractor Co.,
Peoria, Ill.



A small spare reel of cable, mounted on the side of a bulldozer as shown, makes replacement of worn cable an easy task. The exact length of cable needed can be quickly fed through the "dead end" to replace the length of cable cut off or broken.

HERE'S what happens inside a cable as it bends when passing over a sheave and then straightens out while moving to the next sheave. The individual wires are preformed in what might be thought of as a long spiral and twisted together into strands. The strands are twisted together into a rope. This construction permits great flexibility without excessive "stretchiness" and minimizes friction between wires as the cable bends and straightens. In operation, a cable is a group of closely-fitted moving parts.

Cable, like any other part of a machine, requires reasonable care. Its service life can be shortened by abuse or lengthened by proper use and maintenance.

It's not at all uncommon to see a reel of cable rolled over an obstacle with the cable taking the brunt of the shock, or to see a pry bar being used to move a reel of cable. Whenever this occurs, some of the life is taken out of the cable before it's ever put to use.

Sharp bends or kinks in a cable are very frequently the cause of rapid wear. When bent or kinked, the wires and strands are moved out of their relative positions and unequal tensions are created on individual wires.

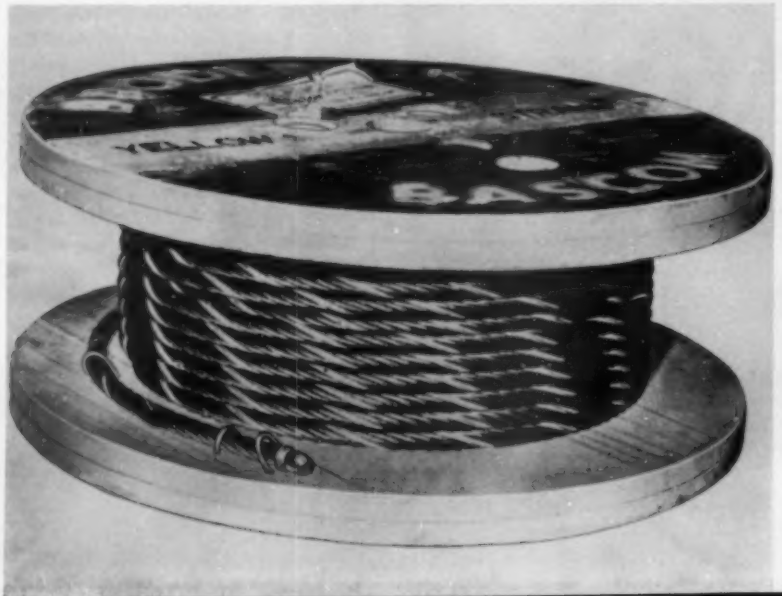
Kinks are caused by careless handling of the cable either on or off of the machine. When unreeling or uncoiling cable from a reel, pull the cable straight away from a rotating reel. Do not let the reel rotate faster than the cable is being removed as the danger of kinking is increased considerably. When cable is removed from a reel which does not rotate, uncoil the length of cable required, placing one coil on top of the other. The cable can then be easily moved to the job site and installed without kinking.

Here are some other important facts to remember when installing new cable. Always be sure to use the correct cable size. Weld or otherwise bind the end of the strands of cable together. In this way, the strands are held in their relative positions and cable wear will not be excessive because of loose, high strands which have moved out of position. The strands of the cut-off end of the reel should also be secured and the end of the cable secured to the reel. Do not drive nails through the cable to secure it to the reel as wires can be damaged or broken and the cable weakened. When installing new cable, assemble the cable on the drum in the direction of the natural coils. If installed correctly, the cable will have a greater tendency to reel onto the drum in a smooth layer.

Proper lubrication of cables will extend cable life, promote safety and re-

Cable is an expendable item which must be replaced frequently during the life of a machine. Many dollars can be saved each year by giving cable proper care and maintenance.

When the end of a cable is welded or otherwise bound together, the strands are held in their relative position and the cable will not wear because of loose, high strands.



duce downtime. The frequency of cable lubrication depends largely on operating conditions. If operating in dusty atmosphere, the cable should be lubricated sparingly, if at all, since dust will adhere to lubricant and cause wear on both cable and sheaves. Cable lubrication is recommended in areas where atmospheric conditions support rusting and corrosion. A film of lubricant will definitely extend cable life.

Check Water Resistance

To prevent rusting, cable lubricants should be water resistant, contain no acids or alkalies and have a high surface tension. Each time a cable is flexed, the wires in each strand and the strands which make up the cable must slide over each other. For this reason, a penetrating, clinging lubricant of high melting point such as "crater compounds"—used for open gears and cables on shovels or cranes—should be used. In the event of an extended or seasonal shutdown, the cable should be cleaned and well lubricated. Sheaves and rollers should always be kept clean and well lubricated to facilitate free turning, and minimize sliding wear on the cables.

Properly maintained equipment means extended life for all parts concerned. Inspections to determine operating conditions and the replacement of worn or broken parts is economy and not a waste of time or money.

The operation and maintenance of cable controlled equipment determines, to a large extent, the life of a cable. Misaligned sheaves, bad sheave grooves and frozen (non-rotating) sheaves can reduce cable life by causing burning and, eventually, fraying. Whenever there is excessive friction between the cable and the other parts of a machine, burning usually results. Burned cable soon becomes brittle and cracks. Cracked wires soon lead to frayed strands and a weak spot in the cable.

The useful life of cable can also be reduced by operating over sheaves that shimmy. Shimmy is caused by worn sheave bearings and results in rope vibration which causes steel fatigue.

After installing a new cable, treat it as you would a piece of new equipment. Don't overstress it. Let it break in easy so that the individual wires and strands have an opportunity to stretch and position themselves in the sheaves and around the drum. Sudden starts or stops should be avoided. Jerking out slack can break even a new cable. "Bird caging" of the cable can result from sudden

Continued on page 60

WORKERS RELY ON CROSBY CLIPS

THIMBLES INCREASE ROPE LIFE, SAFETY

Unless protected by a thimble, wire rope can be seriously damaged by heavy lifts that crush the strands at the load point. A light thimble can collapse and damage the rope. For positive rope protection and safety, specify Crosby Laughlin heavy plow steel thimbles with the extra heavy steel section design that stands up under maximum loads. Plow Steel Thimbles are available in sizes to fit ¼" to 2¼" wire rope. Stainless Steel Thimbles are offered in selected sizes.

Rigging a cable way 600 feet in the air demands the best fittings available to protect men and materials. This crew is assured of maximum safety because their work platform is secured with genuine Crosby* Clips. This clip, quickly identified by the "Red U-Bolt*" is the number one choice on every job where maximum safety and holding power is essential. Look for the red U-bolt—you'll see it securing wire rope in every industry! And Crosby is the *only clip* available in sizes to fit every rope from ⅛" to 3"! Proved design and quality controlled manufacture—finest steel, drop forged base, galvanized—results in consistently reliable performance.

From one source, Crosby Laughlin Lebus, you get the world's most complete line of fittings: Crosby Clips and "Load Rated" Blocks; Crosby-Laughlin drop forged shackles, hooks, Missing Links*, turnbuckles, thimbles, and other fittings; famous drop forged Lebus Loadbinders and drop forged Snatchblocks! Your Crosby Laughlin Lebus Distributor is your one stop fittings supplier—see him next time you need *any* fittings!

*REGISTERED TRADEMARK

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CROSBY-LAUGHLIN *Division*

FT. WAYNE 1, INDIANA

News from the Field

"I've never worked on any but **big** jobs!"

Contractor's Role Outlined

The general contractor's role in the mining industry was described recently at an industrial minerals session of the American Mining Congress' 1957 Metal Mining and Industrial Minerals Convention at Salt Lake City, Utah, J. V. Otter, engineer-specialist, Morrison-Knudsen Co., Boise, Idaho, said: "The full scope of the job that a general contractor assumes in a mining operation for the production of industrial minerals must have an objective that is twofold. First, he must complete a service for the owner that is satisfactory; second, he must show a profit for himself."

"It is too obvious to say that his (the general contractor's) special equipment makes it easier for him to move the earth," Otter said. "His profession goes beyond this. He knows, for example, where to dispose of the overburden so that it need not be moved again, or will not interfere with transport. He understands capacities, and how to take advantage of slopes. He can construct a plant because he has built them before; he knows how to make a road that is neither so sturdy that it is overly-expensive, or so flimsy that it will not carry the load."

Otter cited examples of work done by Morrison-Knudsen to show how general contractors could be of assistance to the mining industry. Among the industrial minerals which the company is under contract to produce are clay, sand, gravel, broken stone, limestone, phosphate rock, sodium carbonate, quartz and uranium.

Speaking of the mining process, Otter said: "The general contractor, being a specialist only in the extraction portion of that entire process, is, by reason of his experience, equipment and manpower, better able to do the work of extracting raw material and its delivery to the processing plant, and at a lesser cost than if the mining company handled this portion of the operations themselves."

Aluminium Builds Powerhouse

An underground powerhouse capable of generating 1 million hp of electricity is being constructed by Aluminium Limited at Chute-des-Passes, Que., on the Peribonka River more than 300 miles north of Quebec City.

The project involves digging a six-mile long tunnel, which will be twice the width of New York's Holland Tunnel, to the powerhouse. Five 200,000-hp generators, largest of their kind in the world, will be installed. When completed, Chute-des-Passes power facilities will give Aluminium Limited a total of 4,780,000 hp of electricity in Canada.

Aluminium Limited is the parent company of Aluminum Co. of Canada, Ltd., and is the same corporation which built the vast subterranean hydroelectric power plant at Kitimat, B. C. The Chute-des-Passes power project, which will cost more than $125 million, compares with that undertaking.

The Perini Co., with two co-contrac-

Continued on page 42

A total of 1 million horsepower will be produced in a subterranean powerhouse being built by Aluminium Limited in Quebec.

Four of many Caterpillar-built machines on the Great Falls Paving Project: two DW15 (Series E)-No. 428 LOWBOWL Scrapers, a D8 Tractor and a No. 12 Motor Grader. The blocks in this area of the project are 430 feet long, and the street width 35 feet. Excavation of heavy clay soil averaged 525 cubic yards a block here.

HIGH PRODUCERS IN NARROW STREETS

New CAT* DW15 (Series E)-No. 428 LOWBOWL Scrapers set fast pace on $4,186,721 Great Falls Paving Project

Four firms associated under the name of City Constructors were awarded the contract to handle the Great Falls Paving Project, Montana. The project involved the reconstruction of about 900 blocks. Among the new Caterpillar DW15 (Series E)-No. 428 LOWBOWL Scrapers on the job were these two units, owned by S. Birch Inc. & S. Birch & Sons Construction Co. Here you see them at work in heavy clay soil on a typical 35-foot-wide street.

The street was excavated to the depth of a foot for rebuilding. Loads were restricted to avoid damage to utilities and improved streets. Averaging 12 cubic yards a load, each unit made five trips an hour on a 3,000-yard round-trip haul through traffic.

This is just one of many jobs where the new DW15 (Series E) unit proved itself a high producer. In fact, in reports from other jobs, this point is clear: When the new DW15 is compared with competitive units of similar capacity, it leads the pack in performance. Many factors contribute to its superiority. For example, it has a high travel speed of 37.2 MPH with the stability of four wheels. Very maneuverable, it turns within a 35-foot diameter, and its stability permits short turns at high speeds. Its wide-section 26.5 x 25 tires provide maximum flotation. And the new No. 428 Scraper's LOWBOWL design means a faster loading rate clear to the end of the loading cycle.

The new DW15 (Series E) delivers 200 HP (maximum output capacity). The new No. 428 has a capacity of 13 cubic yards struck, 18 cubic yards heaped.

Your Caterpillar Dealer, who backs you with prompt service, will be glad to show you cost-of-operation figures on actual jobs. Better still, name the date—he'll demonstrate, right on your job!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

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ONE GOAL: To concentrate our capabilities, resources and experience on the design, manufacture, distribution and service of job-tested heavy equipment.

THE LATEST, MOST COMPLETE INFORMATION ON THE NEW HIGHWAY PROGRAM—FREE

Here in one booklet is *all* the latest information on the new highway program. Find out how, where and when the money will be spent; standards for the new freeways; final routes of the Interstate System. Everything you need to know to share in the greatest construction job in history.

DEPT. EE-11, Caterpillar Tractor Co.
Peoria, Ill.

Please send me immediately
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Company_____

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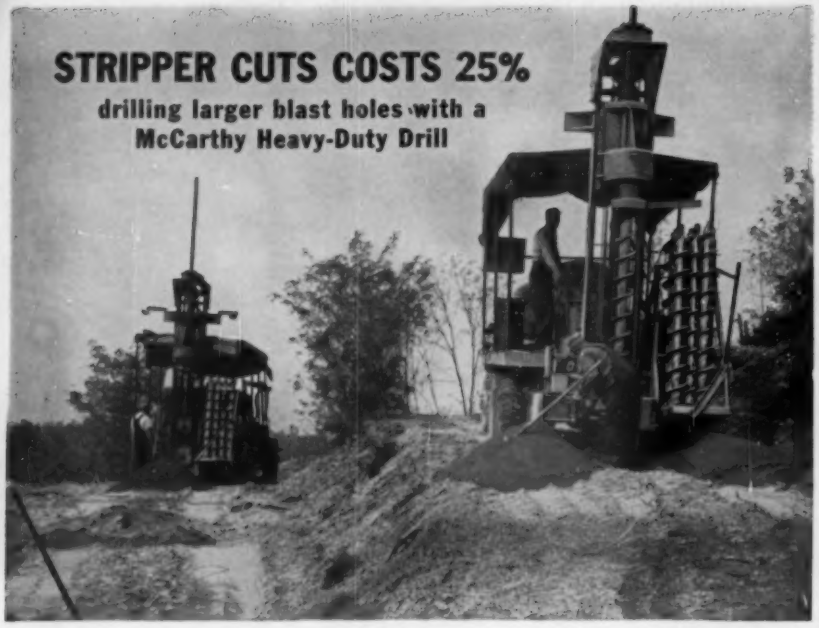
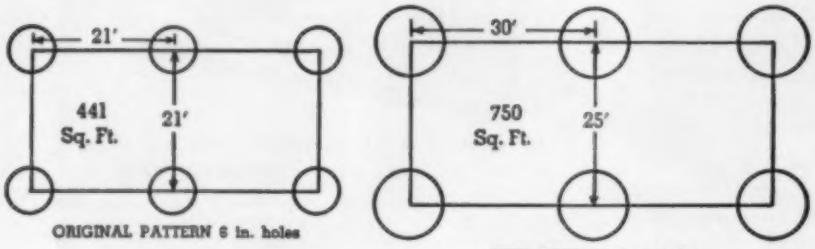


This strip mine operator cut drilling and blasting costs 25% by using this 25' x 30' pattern of 8 in. blast holes—drilled by two McCarthy Heavy-Duty Vertical Auger Drills.

A Southern Ohio strip mine operator cut his drilling and blasting costs by 25% when he widened the blast hole pattern and switched from 6 in. diam. to 8 in. diam. holes. He used McCarthy Heavy-Duty Vertical Auger Drills and a new type of explosive to remove the sandstone overburden.

A cost study made by the operator shows that the McCarthy drill bored the 8 in. holes at less cost than the 6 in. holes. Four 6 in. diam. holes covered 441 sq. ft. Four 8 in. holes covered 750 sq. ft. Since fewer 8 in. holes were required to drill the same area, over-all drilling time was cut in half. In each pattern, the amount of hard rock drilling was the same. The study included five work shifts of two McCarthy Model 106-24 Auger Drills, one using 6 in. and the other using 8 in. flights. The stripper figured all drilling and blasting costs, including fuel, labor, bits, explosives, etc. Over-all cost saving was 25%.

McCarthy Heavy-Duty Vertical Auger Drills drill up to 24 in. diam. holes faster than any other auger drill. Start cutting your costs now by phoning the nearest Salem Tool representative. Or write for Bulletin M-100.



Manufacturer of Drilling Equipment Since 1901

THE SALEM TOOL CO.

799 S. ELLSWORTH AVE. • SALEM, OHIO, U. S. A.

News . . .

Continued from page 40

tors, began work on the Chute-des-Passes project in November 1956. Access tunnels, or adits, were begun at three points along the route of the main tunnel, which will run from a storage lake to the subterranean powerhouse, six miles downstream on the Peribonka.

With construction of the adits completed, the main tunnel and powerhouse cavern are being excavated. The powerhouse and tunnel are scheduled to be completed in August 1959.

The tunnel, which will carry water at 18,000 cfs, will gradually decline to a point where the water will drop almost 636 vertical feet to the powerhouse. The electricity produced will be carried south to the aluminum smelters on transmission lines of 330,000 voltage.

B-E Promotes Goree

Edwin T. Goree has been promoted to assistant general sales manager of Bucyrus-Erie Co., South Milwaukee, Wis. He will assist L. E. MacDonald, general sales manager.

Goree, a native of Calexico, Calif., received his Bachelor of Science degree in mining engineering from the University of California in 1937. He was a mining engineer for Pato Consolidated Gold Dredging, Ltd., in Colombia, South America, from 1937-'40.

Goree joined Bucyrus-Erie's export sales department in 1947 and traveled in Mexico, Central America and South America. He was named Bucyrus-Erie field representative for Mexico in 1951 and remained there until 1955, when he came to the South Milwaukee office as assistant sales manager, excavator distributors.

Equipment You Ought to Know About

Passenger-Pickup

Manufacturer: Motor Truck Div., International Harvester Co., Chicago 1, Ill.

Claims: The Travelette, a custom-styled International pickup truck with six-passenger cab, has been introduced as a combination passenger-cargo carrier.

The new unit is available on a 129-in. wheelbase chassis in the models A-110, A-112, A-120, A-122 and the four-wheel-drive model A-120 (4x4). It will handle up to full one-ton loads.

The cab has a full width rear seat accessible through a third, curb-side door. The 6-ft. pickup body is 54½ inches wide; 49½ between wheel housings. Ninety-inch load-carrying length is obtained from the front of the body to the rear of the lowered tailgate.

The Travelete, also available with an 82½-in. service utility body, is offered in either custom or utility styling. Its short over-all length, under 210 inches,

facilitates parking, maneuvering and garaging.

Standard engine is the 141-hp International Black Diamond 240. The 154-hp BD-264 is available optionally.

International has also introduced two new transmission side-mounted power take-off assemblies for light-duty four-wheel-drive trucks.

Use of the new power take-offs permits operation of equipment located to the rear of the cab and increases the versatility of the rugged four-wheel-drive chassis. Hydraulic pumps, single direction winches and air compressors are types of equipment that can be driven from this source of power.

The power take-off assemblies are available for synchromesh or sliding-gear four-speed transmissions on International model A-120 (4x4), S-120 (4x4) and R-120 (4x4) trucks. They are one-speed units which mount on the right-hand side of the transmission. Controls are mounted inside the cab on the instrument panel.

On both assemblies, the output shaft points to the rear and operates in one direction.

Cable Clamp

Manufacturer: Sauerman Bros., Inc., 622 S. 28th Ave., Bellwood, Ill.

Claims: A new Sauerman fitting provides a quick way of attaching a load to a continuous cable. The clamp is used for car pulling, barge moving, rigging or any job where a load must be connected to a line.

The three-part fitting consists of a wedge clamp, wedge and cable clip. To attach the load to the cable, the wedge clamp is placed on the cable with the small end in the direction of the cable pull. The wedge is then inserted. The cable clip passes through the eye of the wedge and locks it in place. A clevis and pin are frequently used to attach the load to the clamp.

Sauerman continuous cable clamps are manufactured for rope sizes from ⅛ to 1¼ inches.

Low-Bed Trailer

Manufacturer: LaCrosse Trailer Corp., Department EE, LaCrosse, Wis.

Claims: A new 12-ton capacity low-bed trailer for small contractors has been announced by LaCrosse. Designated as the DFS-12, the new single-axle model semi makes use of two main beams and full-length outer channels as load-carrying members, to provide maximum strength with minimum weight.

Engineered for use behind standard fifth-wheel tractors, the trailer has an 8 x 14-ft. oak deck platform, with 41-in. gooseneck and 2-ft. beavertail, and comes equipped with 8.25 x 15 4-ply tires, ICC lights, lash rings and 12¼ x 6-in. air or vacuum brakes. The brakes are the same S-cam design, with worm-type slack-adjusters and removable

brake spiders, as are used on standard heavy-duty LaCrosse trailers.

The trailer has an 18,000-lb. 6 x 6-in. H-beam cambered axle designed for a gross load of 17,800 pounds, with a gross load of 10,650 pounds on the kingpin.

Special Dump Body

Manufacturer: Jacob Press' Sons, Inc., Department EE, 501 W. 33rd Pl., Chicago, Ill.

Claims: A new triple-tapered dump body designed primarily for efficient hauling of sand and gravel has been introduced by Jacob Press.

This new body is wider at front than at rear; higher in front than in rear; and longer at bottom than at top. The

Continued on page 46

STANDS UP TO SEVERE USE

and even abuse

One word describes a Hayward — *ruggedness.* Yes, it's as tough, strong, sturdy as a bucket can be — and even more so. Extreme simplicity, little if any upkeep, high operating efficiency! Details on request. Write! THE HAYWARD COMPANY, 50 Church St., New York 7, N.Y.

HAYWARD BUCKETS

CLAM SHELL • ELECTRIC • ORANGE PEEL • GRAPPLES

famous for performance since 1888

The New Champ! →

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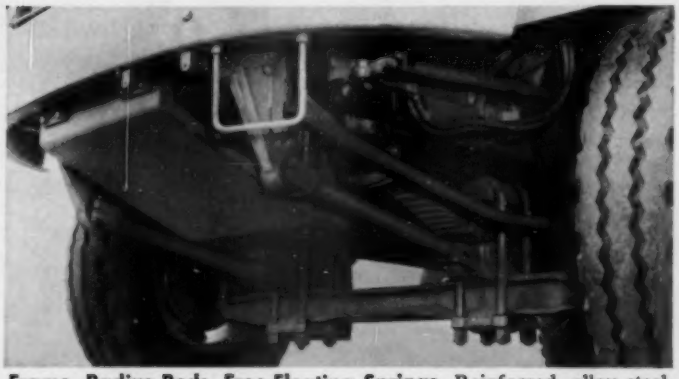
ESTABLISHES NEW RECORDS BY MOVING

Out on the job these specially designed Autocars are beating every claim we made for them. Rated at 15 tons, they haul their huge loads at top speeds up to 39 mph. And their combination of fast axle ratios with a 10-speed transmission permits them to operate at higher speeds on up-grades, too. Whether they're at work on road construction or in a quarry, they're doing the job faster and more efficiently than ever before.

Autocar AP-15

MIGHTY LOADS ON A FASTER TRIP CYCLE

Yes. The AP-15 is designed to do the job better



Frame, Radius Rods, Free-Floating Springs. Reinforced, alloy steel frame with bolted construction is rigid enough to keep components in line and flexible enough to absorb torsional stresses. Heavy-duty radius rods, front and rear, hold axles in alignment with frame. Free-floating springs absorb road shocks and assure long tire life.

• • •

This Autocar rewrites the book of rules for profitable hauling of fill, aggregate, rock and similar materials. Before you buy your next truck, it will pay you to talk to your White-Autocar Distributor about the rugged, powerful AP-15.

White Autocar

AUTOCAR TRUCKS

AUTOCAR DIVISION · The White Motor Company
Exton, Pa.

Planetary-Gear Rear Axle. The AP-15 is built around this basic component because it delivers the torque from the powerful Diesel engine all the way back to the rear wheels. In fact it places the highest numerical gear reduction right in the wheels, thus decreasing torque load on axles and differential. It assures long gear and shaft life and makes the units transmitting power as strong and dependable as the rest of this giant truck.

Autocar Driver Cab, Power Steering. Designed and built to provide maximum comfort as well as strength and durability, the Autocar Driver Cab permits the driver to put in a full day without undue fatigue. Full hydraulic power steering makes this monster truck as easy to handle as a passenger car. The unique "Full-Adjust" seat allows the driver to find his own most comfortable position.

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Heat-Houser is a Heavy Duty, Water Resistant Canvas Cover Built for a "Clean Fit."

	Price
• **INTERNATIONAL**	
T-6, TD-6	23.05
T-9, TD-9-9I	23.05
TD-14	25.90
TD-14A, 141, 142 series—fits with blade	25.90
TD-18, TD-18A	25.90
TD-18A, 181, 182 series—fits with blade	28.70
TD24, TD-24A	25.90
TD-24A, 241 series	28.70
• **ALLIS-CHALMERS**	
HD5	23.05
HD7	23.05
HD10	23.05
HD15	28.70
HD9	25.90
HD19, HD20	28.70
HD11 W/cable dozer	25.90
HD11 BD GB W/dozer or grader	28.70
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HD21	33.30
• **CATERPILLAR**	
D2	23.05
D4	23.05
D6 W/cable dozer	28.90
D6 W/hyd. dozer	28.90
D7 W/cable dozer	28.90
D7 W/hyd. dozer	28.90
D8	34.85
D8 14A-15A series	34.85
D9	34.85
RD6	25.90
RD7	28.70
DW10	23.05
DW20	28.70
#12 Cat Grader	41.45
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B	25.90
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Check and clip this list and send for your Heat-Houser! All prices F.O.B. Fort Dodge, Iowa. Immediate shipment.

BURCH MANUFACTURING CO. FORT DODGE, IOWA

New Equipment . . .

Continued from page 43

design allows for a greater load on the front end to take advantage of strict weight laws in various states.

The tailgate control is operated manually from within the cab. A 20-ton twin-telescopic hoist is used to raise and lower body. Sides, front, rear and floor are constructed of lightweight, high-tensile SAE No. 950 steel.

The steel floor is flanged up on the sides, reinforced with inverted V-braces

in three rows on the under side. The top sides of sections are formed to channel sections and reinforced with inverted pressed steel channels. The front wall is reinforced with three or more pressed-in V's, top formed to open box section.

Cat Engine, Tractor Accessory

Manufacturer: Caterpillar Tractor Co., Peoria, Ill.

Claims: The Caterpillar D353 engine, well-known as the power unit in the Caterpillar D9 tractor, is now available in industrial engine, marine engine, and electric set arrangements.

The 6-cylinder, four-cycle D353 has a 6¼-in. bore and 8-in. stroke. It is rated at 390 (maximum output) hp at 1,300 rpm. The rated output of the Cat D353 electric set is 200 KW.

Many of the features incorporated into the new engine are the same as those found in the other engines comprising the Caterpillar line. Important among them is the fuel system, which allows operation on a wide variety of fuels without fouling. It is designed to operate equally well on No. 2 furnace oil or premium quality diesel fuels.

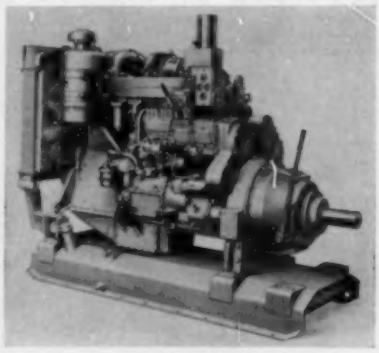
In addition, the camshaft on the D353 engine is mounted high in the block, permitting the use of a short, rigid valve train, which produces accurate valve motion. Hardened steel valve seat inserts and positive valve rotators contribute to long, efficient valve seat life.

The turbocharging feature of the D353 utilizes waste energy from engine exhaust to pack more air into the cylinders. This results in the more complete combustion of fuel, and increased engine horsepower. Since the turbocharger does not produce a draining power load on the engine, but uses energy which would otherwise be lost, the over-all efficiency and economy of the engine is increased.

Along with the Cat D353, the company is also making available a full line of matched attachments. Items such as air, electric or gasoline starting systems; clutches; bases, controls and governors; cooling systems and mufflers have been specifically designed to match the new engine's performance in all applications.

Caterpillar has also introduced new type hot water heaters for three tractor models. The heaters may be used with the D9, D8 and D4 tractors equipped with cabs, and are available in two types —recirculating and fresh air.

The recirculating type reheats the air supply within the cab, while the fresh air heating system uses outside air. Use



of the latter system reduces the possibility of condensation on windows and the need for defrosters, as well as providing a constant supply of fresh air for operator comfort.

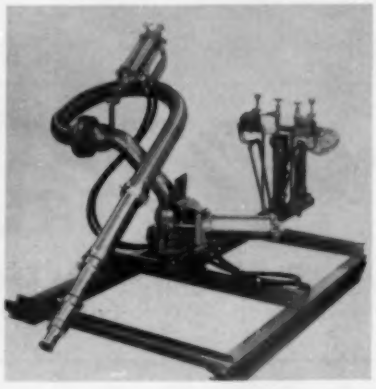
The new heaters replace the recirculating type heater formerly available for these tractor models. Both heaters are available either factory-installed on new machines or for installation on machines already in operation.

3-In. Hydraulic Monitor

Manufacturer: Chiksan Co., Department EE, Brea, Calif.

Claims: Chiksan's line of Intelli-Giant hydraulic monitors now includes a 3-in. size. The small, but powerful, newcomer is simply designed like the larger 4 and

Continued on page 50



WIRE ROPE AT WORK

Nello L. Teer, of Durham, N. C., has handled many tough contracts, but the one near Aliquippa, Pa., probably topped them all. This project called for the widening of Constitution Boulevard along the east bank of the Ohio River. Teer's contract, covering 2.51 miles, required some prodigious digging. An estimated 3,000,000 cu yd of rock and dirt was removed from the shale and sandstone cliffs that bordered the roadway.

While breaking the rock from the face of the cliffs, the Teer shovels frequently worked at close quarters on very narrow benches. Though it was rugged going, the schedule permitted no delays. To assure top performance of critical boom and hoist lines, Bethlehem wire rope was chosen for these assignments, and easily met every demand imposed upon it. Bethlehem rope is a natural for this kind of work, being so tough and strong that it takes the heaviest loads in stride.

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

Mill depots and distributors from coast to coast stock Bethlehem rope for the following industries and numerous others:

CONSTRUCTION • EXCAVATING • MINING • QUARRYING • PETROLEUM • LOGGING • MANUFACTURING

here's the NEW HD-21...

DESIGNED AND BUILT TO FIT

Now . . . major advances make the Allis-Chalmers HD-21 more productive than ever . . . capable of handling big-tractor jobs of every kind with the efficiency and dependability all contractors want and need.

New 225-net-hp turbo-engine

New weight—45,500 lb (bare)

New power train and torque converter effectiveness, simplicity

New longer track for matched traction, flotation

New operating ease and control with work-saving decelerator

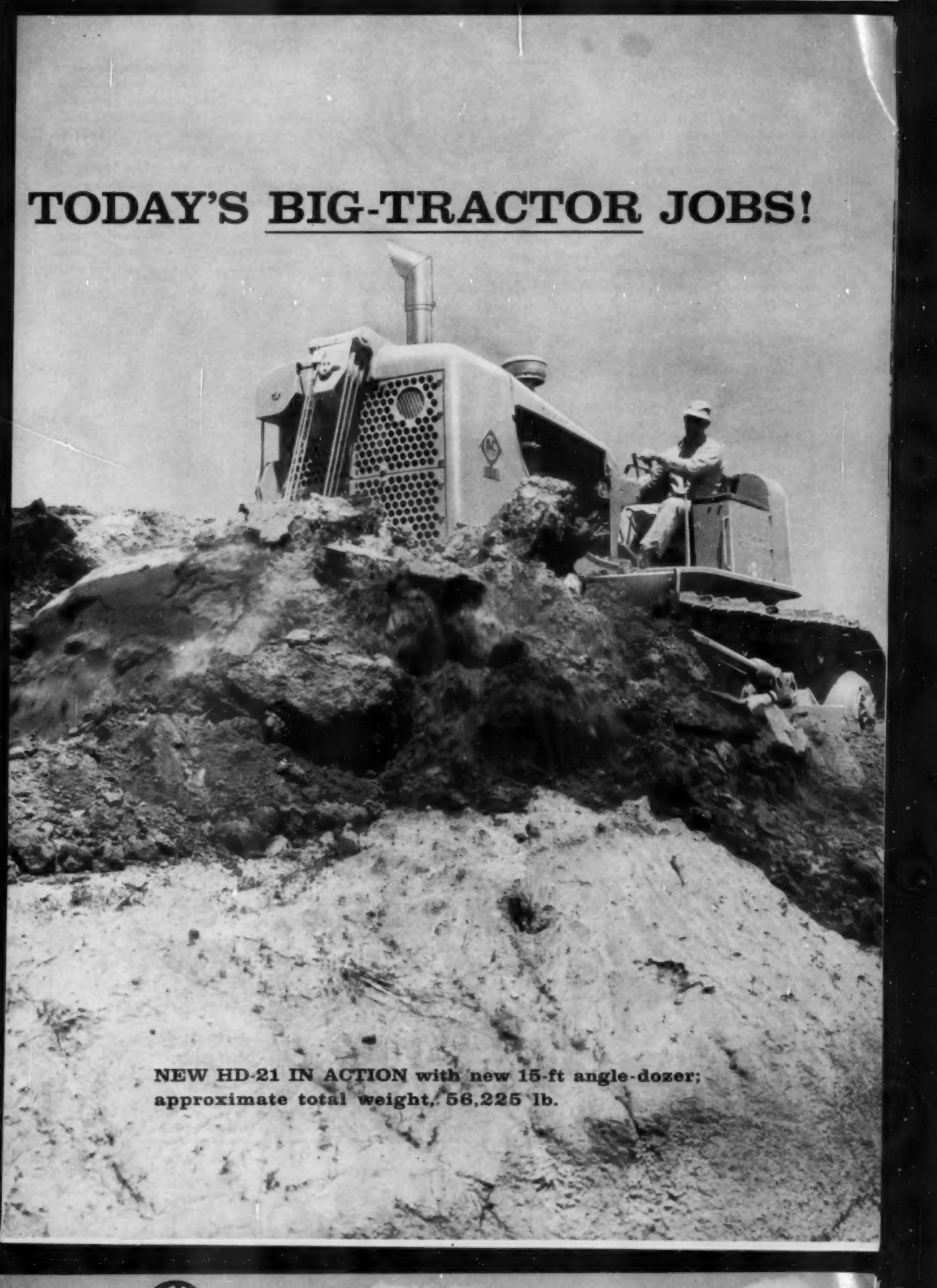
New heavy-duty matched dozers

Here's a big tractor you can depend on to help you bid with confidence in your cost estimates. Your Allis-Chalmers dealer will be glad to talk to you about the new "21" . . . and to prove its value in a working demonstration on your job. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS

Engineering in Action

TODAY'S BIG-TRACTOR JOBS!



NEW HD-21 IN ACTION with new 15-ft angle-dozer; approximate total weight, 56,225 lb.

New Equipment . . .

Continued from page 46

6-in. models, and completes a full range of sizes designed to meet most hydraulicking and washing needs.

A patented barrel design with its single full-diameter smooth interior flow sharply checks friction loss and provides ease of handling. It also neutralizes forces which ordinarily cause "whipping." Even when operated manually, the new Intelli-Giant may be easily controlled with one hand at pressures of 30 to 300 psi.

It is ideally suitable for use in the construction field for slurrying, tunneling, scaling of dam walls and settling of pipe line fills. In the extractive industries it may be used economically for removal of perma-frost, overburden and in slurrying.

The Intelli-Giant's powerful stream is suitable for slurrying solids for movement by pipeline, washing boxcars and barges carrying coal and phosphate and for cleaning storage tanks of oil and other materials.

The new model has a 270° horizontal traverse and 120° vertical sweep. The hydraulic controls require no power source other than water pressure diverted from the mainstream intake. For cold weather climates a closed-circuit hydraulic system is available.

Let-Wesco Prime Mover

Manufacturer: LeTourneau-Westinghouse Co., 2301 N. E. Adams St., Peoria, Ill.

Claims: LeTourneau-Westinghouse "B" Tournapulls now are available with a choice of transmissions—a torque converter or conventional manual-shift type. A bigger 335-hp turbocharged diesel engine is standard equipment for torque converter machines.

The new transmission is being built for LeTourneau-Westinghouse by the Allison Div., General Motors Corp. It consists of single-stage, four-element torque converter combined with a heavy-duty, power shift gear box. Four forward and two reverse ranges provide the equivalent of an infinite number of gear ratios with speeds up to 30 mph.

One of the features incorporated as standard equipment is an automatic lock-up clutch in the unit which has been added to provide maximum operating efficiency and economy. This clutch eliminates power consuming slippage in

the converter at haul speeds. In second, third and fourth ranges above 1,850 rpm, when torque multiplication is not needed, the unit is automatically put into a direct drive with the torque converter locked out. When rpm's drop below 1,850, the clutch automatically disengages bringing the torque converter into operation again.

Also standard is brake-saving hydraulic retarder. This unit, an additional rotor-stator and valve system which operates in a separate chamber behind the converter elements, automatically provides counter pressure when descending grades in any forward range. Developing a retarding force of up to 1,200 foot-pounds torque, it makes use of service brakes necessary under most conditions only for bringing the Tournapull to a full stop.

Rotary Compressors

Manufacturer: Gardner-Denver Co., Department EE, Quincy, Ill.

Claims: Gardner-Denver has added two new models—the RP125 and RP365—to its line of rotary compressors.

The manufacturer considers the advantages of a clutch between the engine and the compressor so important that this design feature has been retained in the new units. The engine starts freely and warm engine water circulates through the compressor oil cooler and reservoir. Thus, warm, free-flowing oil is supplied to the compressor as soon as it starts turning.

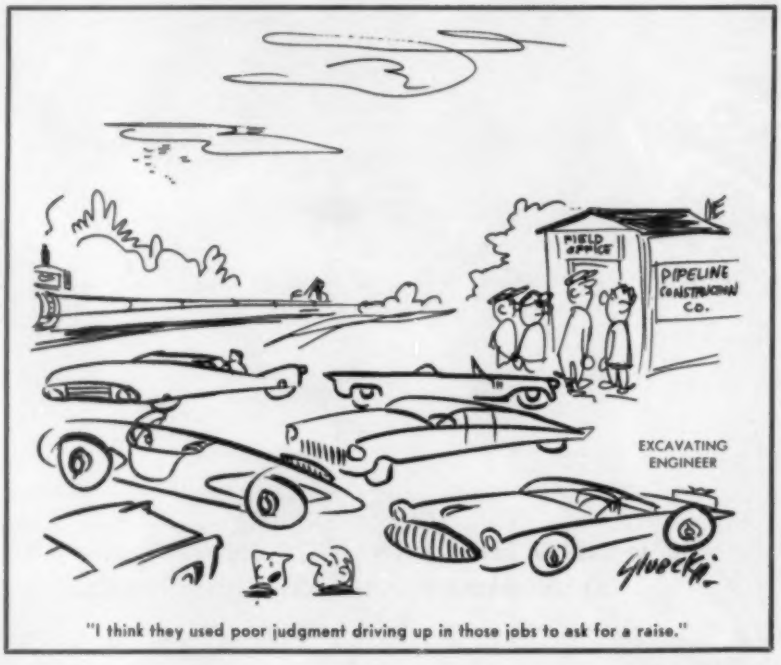
An oil pump assures positive oil flow for compressor lubrication and cooling, independent of receiver pressure, under all operating conditions. The water cool-

ing system maintains constant operating temperature for both compressor and engine, even during extremely hot or cold weather.

Both models require only a few minutes for inspection of working parts. The removal of 12 cap screws is all that is required to expose the blades for inspection or replacement.

Model RP125 is available with either gasoline or diesel engine. It is 10 feet 6

Continued on page 52



"I think they used poor judgment driving up in those jobs to ask for a raise."

This is one of three 190-B shovels used to load out limestone from Presque Isle Corporation's quarry at its Stoneport location.

Here is Presque Isle Corporation's loading site at Alpena, Mich.

In Michigan . . .
and the world over

WHERE DEPENDABILITY IS ESSENTIAL BUCYRUS-ERIES ARE FAVORITES

The entire production of the Presque Isle Corporation's limestone quarry and crushing plant is transported by boat. Consequently, operation of the 1740-ton-per-hour plant is limited to the length of the shipping season on Lake Huron. To keep its Stoneport (Mich.) operation going at full capacity during this shortened working season, the company uses three Bucyrus-Erie 8-yd. 190-B electric shovels.

The high output of the three Bucyrus-Erie Ward Leonard electric shovels keeps quarry production ahead of plant capacity . . . all season long. If sustained high output is essential to *your* operations, investigate this outstanding line of heavy-duty excavators.

127L57C

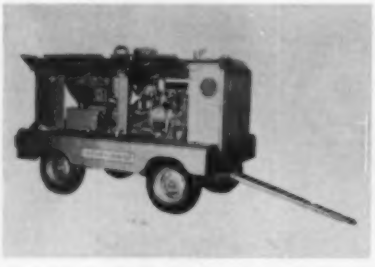
A Familiar Sign BUCYRUS ERIE *at the Scene of Progress*

BUCYRUS-ERIE COMPANY • South Milwaukee, Wisconsin

FOR 50 YEARS...
Finest in the Field!
Rely on the bucket contractors rely on. The Omaha Dragline Bucket gives full load with every cast. Perfect balance makes it easy to spot dump. Alloy steel cutting teeth stay sharp, tough and ready. Strike pay dirt now! Complete information and specifications await your letter.
DRAKE-WILLIAMS MOUNT • OMAHA, NEBR.
OMAHA
DRAGLINE BUCKETS

New Equipment . . .

Continued from page 50



inches long (from the end of the stationary tow bar to the back of the compressor), 4 feet 8 inches wide and 5 feet high.

Model RP365 is equipped with a diesel engine as standard equipment. It is 10 feet long (with movable tow bar in vertical position), 5 feet 7 inches wide, 6 feet 5 inches high and has a net weight of 7,730 pounds.

6½-Ton Rock Ripper

Manufacturer: American Tractor Equipment Corp., Department EE, 9131 San Leandro Blvd., Oakland 3, Calif.

Claims: A new ATECO 7,025-lb. heavy-duty rock ripper is designed especially for the Eimco 105 front loader or dozer tractor.

A special drawbar takes all draft loads, preventing strain on the tractor transmission case. Ripper controls utilize the tractor hydraulic system and do not interfere with loader or dozer operation.

Up to three ripper shanks may be mounted on the heavy-duty head frame. Swivel-mounting brackets allow shanks to swing 30°; they follow the tractor like a trailer for effortless steering even while ripping at full depth.

Shank selection includes a curved gooseneck shank for rock ripping, and

a forged straight shank for ripping sandstone, gypsum, caliche and similar material. A selection of seven types of self-sharpening points is offered to meet any job condition. Maximum ripping depth with gooseneck or straight shanks is 24 inches. Overall width of the head frame is 102 inches and distance between shanks is 43 inches. Weight of the unit is 5,940 pounds with two shanks; 7,025 pounds with three shanks.

Pneumatic Roller

Manufacturer: Construction Machinery Div., Southwest Welding & Mfg. Co., Department EE, 3201 W. Mission Rd., Alhambra, Calif.

Claims: A new design in self-propelled pneumatic compaction rollers is incorporated in the 9-ton and 11-ton Vertical-Pak roller. The new roller affords vertical oscillation for the first time in its weight class through the vertical action of the rear wheels.

Vertical oscillation affords a constant, uniform wheel load as well as uniform capacity on uneven surfaces, over soft spots and where stones or boulders are present in the materials undergoing compaction. Tests by the manufacturer reveal Vertical-Pak action reduces tire hazard considerably. Excessive weight on any one tire or wheel is impossible under normal operating conditions. Curbs and other obstacles are no longer a hazard in close work.

The machine places the operator in a position to see both forward and reverse equally well at speeds in both directions up to 15 mph. Extra strong rear wheels are especially manufactured for this particular machine. Ballast capacity is 120 cubic feet. A differential individual chain drives to all four drive wheels. Overall length of the machine is 13 feet 1 inch; overall height is 78 inches; and overall width is 84 inches.

The roller is available in both 11-ton, 11-wheel models and 9-ton, 9-wheel models. A 50-hp gasoline or diesel engine is optional. Tires are 7:50 x 15, 4-ply. Six-ply tires are optional. Shipping weight is approximately 7,500 pounds.

where Speed and Ruggedness count, the 43-M truck crane is a must on—

really big crane jobs!

Here are some of the features responsible for the outstanding performance of the 43-M truck crane.

- A heavy duty 40-ton crane
- Torque converter (standard) increases output
- Air control means finer, faster crane work
- Ballast is raised and lowered by power
- Independent boomhoist power drives the boom up and down for precision boom control
- Strong, maneuverable, highly mobile carrier
- Fast, on-the-job conversion to dragline or clamshell operation

Whatever your operation . . . regular crane work, setting steel, log handling, pouring concrete, magnet work . . . your Marion representative will be glad to show you how the 43-M truck crane can conserve manpower while increasing output and profits.

Whatever your job requirement, there is a Marion machine of the right size and type for greatest efficiency.

Your MARION distributor is the man to see. He can save you money!

MARION

Marion Power Shovel Company
Marion, Ohio, U.S.A.

Send us complete information on the 43-M truck crane, including bulletin #432.

Name .....

Company .....

Address .....

City ..... Country .....

WC-7-57

NOT in the Contract

A man had a small farm down there with just a few sheep and one day his wife, while dyeing some bedspreads blue, had a little lamb fall into the bucket of dye. A passing motorist spying the lamb with the blue fleece stopped and offered $50 for it. So the Texan figured he had stumbled onto a good thing and colored more of his lambs with blue dye which brought him big profits.

"Pretty soon," he recalled, "I was coloring my lambs pink, blue, yellow, green, lavender and turquoise, and you know—now I'm the biggest lamb dyer in Texas."

The female is the sex that believes that if you charge it, it's not spending; and if you add a cherry to it, it's not intoxicating.

Julius came bursting into the kitchen crying bitterly. "The kids beat me up, Ma—they said I have a big head."

"Now, Julius, just don't believe them. It's not true that you have a big head."

So, partly convinced, Julius calmed down. "Now Julius, run down to the store and get me ten pounds of potatoes."

"Okay, Ma, gimme a bag to carry 'em in," replied Julius.

"A bag? What do you need a bag for?" asked his mother. "Carry them in your cap."

A young man at a party felt that he was getting on very well with the blonde he had met for the first time.

"When this is over, how about coming over to my apartment for a whisky and sofa?"

"Don't care for whisky and sofa," she replied, "but I don't mind coming for a gin and platonic."

An infant was awakened from a peaceful slumber in a hospital. Looking down at his raiment, he yelled over to the occupant of the next crib:

"Did you spill water on my diaper?"

"Naw," was the answer.

"Huh—then it must have been an inside job!"

"Hold still, dammit!"

Friend: "That must be very tricky work — making bridges for people's teeth."

Dentist: "Yes, it is at times. But it's nothing compared to making people come across."

For over a year, a man had eaten in a small restaurant whose sign read: "Sally's Home Cooking," but never once had he seen Sally. Finally, his curiosity got the better of him and he said to the waitress: "I've been having lunch in here for a long time, and Sally is never around; where is she?"

"She's just where the sign says she is," the waitress answered, "home cooking."

The freshman's father paid his son a surprise visit. Arriving at 1 a.m., he banged on the fraternity house door.

A voice from the second floor yelled, "Whatdya want?"

The father answered, "Does Joe Jones live here?"

The voice answered, "Yeah, bring him in."

The guide had a tough time reassuring the eastern dude, as they set out on the pack trip across the desert and into the mountains.

"You say we sleep outdoors? What about bears!"

"They won't hurt you none if you don't bother them."

"And rattlesnakes; you say we're in rattlesnake country. What do I do if I get bit by one?"

"Well, you take out your knife and, for example, if you're bit on the arm, you cut into the place where the snake bit, put your mouth down and suck the blood from that cut and then spit it out, in that way getting rid of the poison."

"But suppose I'm bending over and get bit on my behind. Then what?"

"Well, mister," said the boss wrangler after careful consideration, "that's when you find out how loyal your friends are."

A certain banker likes to test applicants for positions as teller in the following way.

He says, "Here is a check for $63. Please give me that amount in exactly six bills and I don't want any dollar bills."

If the applicant can't satisfy him within 30 seconds, he doesn't get the job.

Teer's CAT* No. 12s help build approach to Patapsco River Tunnel

An important new highway link for North-South travel is the Patapsco River Tunnel, south of Baltimore, Md. It will create a direct connection between Rt. 40 and U. S. 1 without bucking mid-city traffic.

Nello L. Teer Co. of Durham, N. C., is building a 2½-mile section of the four-lane divided expressway leading to the tunnel. The contract calls for moving 1,200,000 cubic yards of earth. Teer's spread on this job includes 12 Caterpillar DW20 Tractor-Scraper units, six D8s, a D9 and two Cat No. 12 Motor Graders.

Good haul roads contribute to low-cost earthmoving, and keeping roads in shape is a motor grader job. With its rugged construction, balanced design and dependable four-cycle Cat Diesel Engine, the No. 12 is built for top production around the clock. Positive-acting controls, easy blade positioning and excellent job visibility all help the operator do more work with less effort. The exclusive Caterpillar oil clutch operates smoothly many hundreds of hours without adjustment. Tubeless tires, at no extra cost, reduce tire down time. And in-cab starting, electric or gasoline, is standard.

Your Caterpillar Dealer not only sells these top-performance machines but takes a personal interest in protecting their long work life with reliable parts and service. See him today.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

WANTED— THE HARD WORK

THE LATEST, MOST COMPLETE INFORMATION ON THE NEW HIGHWAY PROGRAM — FREE

Here in one booklet is *all* the latest information on the new highway program. Find out how, where and when the money will be spent; standards for the new freeways; final routes of the Interstate System. Everything you need to know to share in the greatest construction job in history.

Dept. EE-11, Caterpillar Tractor Co.
Peoria, Ill.

Please send me immediately ..... copies of "The Road Ahead."

Name.....

Company.....

Address.....

City..... State.....

This 22-ton Euclid is filled in four swings of 3½-yd. dipper. Loading into double-spotted trucks, shovel bails 350 yards an hour.

Slate-Hall . . .

Continued from page 25

accidental shots are on record in this mining locality for Slate-Hall to take any chances, particularly since highway traffic passes in a steady stream through the job.

Electric caps and delays are being used by crews to explode the charges. The holes are column loaded, without springing. In places where ground water is heavy, ammonia-gel type powder in 40% strength is being used. Where drier formations permit the use of granular-type powder in down holes, it is used in 40% strength. The firm's powder business is being shared by Hercules, DuPont and Pacific Powder Co.

Use of a Bucyrus-Erie 71-B shovel with a 3½-yd. Esco dipper and teeth marks one of the very first times a power shovel that large has been used on highway work in the Pacific Northwest. The 71-B was purchased new and shipped by rail to a point near the job, where it was then erected. While the machine normally is rated at 3 yards, it has handled the 3½-yd. dipper without difficulty. The shovel is powered by a 300-hp General Motors diesel engine, and has fast-acting compressed air controls which make the operator's job much easier.

In addition to the 71-B, a Northwest 80-D with a 2½-yd. Esco dipper is being used. A second 80-D will be used later for feeding the rock crushing plant, after grading has largely been finished and sub-base work begins.

Hauling units serving the two shovels include six Euclid 15 to 18-yd. end-dump trucks, a Caterpillar DW21 with an Athey PR-21 rock hauling body, and two International Payhaulers. The hauling units are spaced in relation to the shovels so that an empty drives in when the shovel finishes loading. Double spotting is being used wherever possible, keeping the cycle swing under 90° if possible. Under those conditions the 71-B will bail 350 cubic yards an hour even in the most rocky cuts.

Engineering supervision on job is provided by Kurt Luerzer, one of highway department's oldest resident engineers.

Disposal of rock from the shovels is made in fill areas, preferably in the lower portions. Excavation quantities are balanced so that the rock can be dumped in that manner, and finer material from a tractor-equipment fleet can be used as a cover. The rock lifts are made in thicknesses which match the largest piece size.

The unclassified block of excavation, in topsoil, dirt and other material which does not require blasting, is being handled by the tractor equipment fleet. In this fleet are four Caterpillar DW21's. They are economical to use in the same general distance which governs the trucks under the shovels, so that their performance can be matched for the over-all good of the project. They can finish out a fill in short order even if haul distances get up to 3,000 feet, which they sometimes do on this project. Both sheepsfoot and pneumatic compaction is being used. Nearby creeks furnish water for compaction.

The job headquaters is centered in the approximate middle of the project. It consists of an administrative office in a trailer, trailer-mounted parts and materials storage, and a three-bay heavy equipment repair shop. Yard space is limited because the job passes through a narrow canyon, and there's little flat-

Continued on page 60

Road, Street, Highway Builders:

Hydrocranes Earn More Because They Do More . . . Move Faster

The 5-ton ⅜-yd. H-3 Hydrocrane has maximum boom length of 38 ft. (with 3-piece boom). Pictured excavating a catch basin, the H-3 handles dozens of road-building jobs, moves easily from spot to spot.

The Hydrocrane combines unusual flexibility with conventional truck mobility, big capacity, hydraulic power and unequalled precision control to give you a high-speed machine that moves faster, works faster and earns more. With hydraulic power and precision, Hydrocranes lift forms, poles, shoring; handle concrete buckets; load and unload sand, gravel, dirt; excavate for catch basins, water and sewer lines, electric and telephone conduit and manholes.

All-hydraulic design makes possible compactness and lightweight for mounting on an ordinary commercial truck. Four steel outriggers extend and set hydraulically to provide a solid working base . . . eliminate stresses on the truck.

See your Bucyrus-Erie Hydrocrane distributor soon for the complete Hydrocrane story. 178H57C

BUCYRUS ERIE

A Familiar Sign at Scenes of Progress

BUCYRUS-ERIE COMPANY • SOUTH MILWAUKEE, WISCONSIN

The ½-yd. H-5 loads blacktop and dirt on a repair job. Compact design and short tail swing let it work at the curb without blocking traffic. Maximum boom length is 50 feet (with 3-piece boom).

Hydrocrane booms are "live action" booms that telescope out and retract hydraulically, change angle at the touch of a lever to make close quarter work under or over obstructions easier. This H-3 is opening trench for water main construction.

A tale of two road

CAT* D9 Tractor push-loads a DW21-No. 470 Scraper in heavy glacial clay. Says Jack R. Hepp, Project Manager: "The D9 really is showing its stuff in this tough clay."

CONTRACTOR: E. M. Duesenberg, Inc., Clear Lake, Iowa.

JOB: Moving 4,000,000 cu. yd. for an eight-mile section of a four-lane divided highway (Route 69) near West Des Moines. Job includes cuts to 50 feet and Iowa's first complete cloverleaf.

CATERPILLAR FLEET: Two D9s, two D8s, three D7s, one D6, five DW21s, three No. 12 Motor Graders, one DW20, three D8-No. 463 Scraper units and three D6-No. 6S Bulldozers.

MATERIAL: Heavy glacial clay, shale, wet silty clay.

PRODUCTION: 20,000 yards per 20 hours on 2,000-foot round-trip hauls.

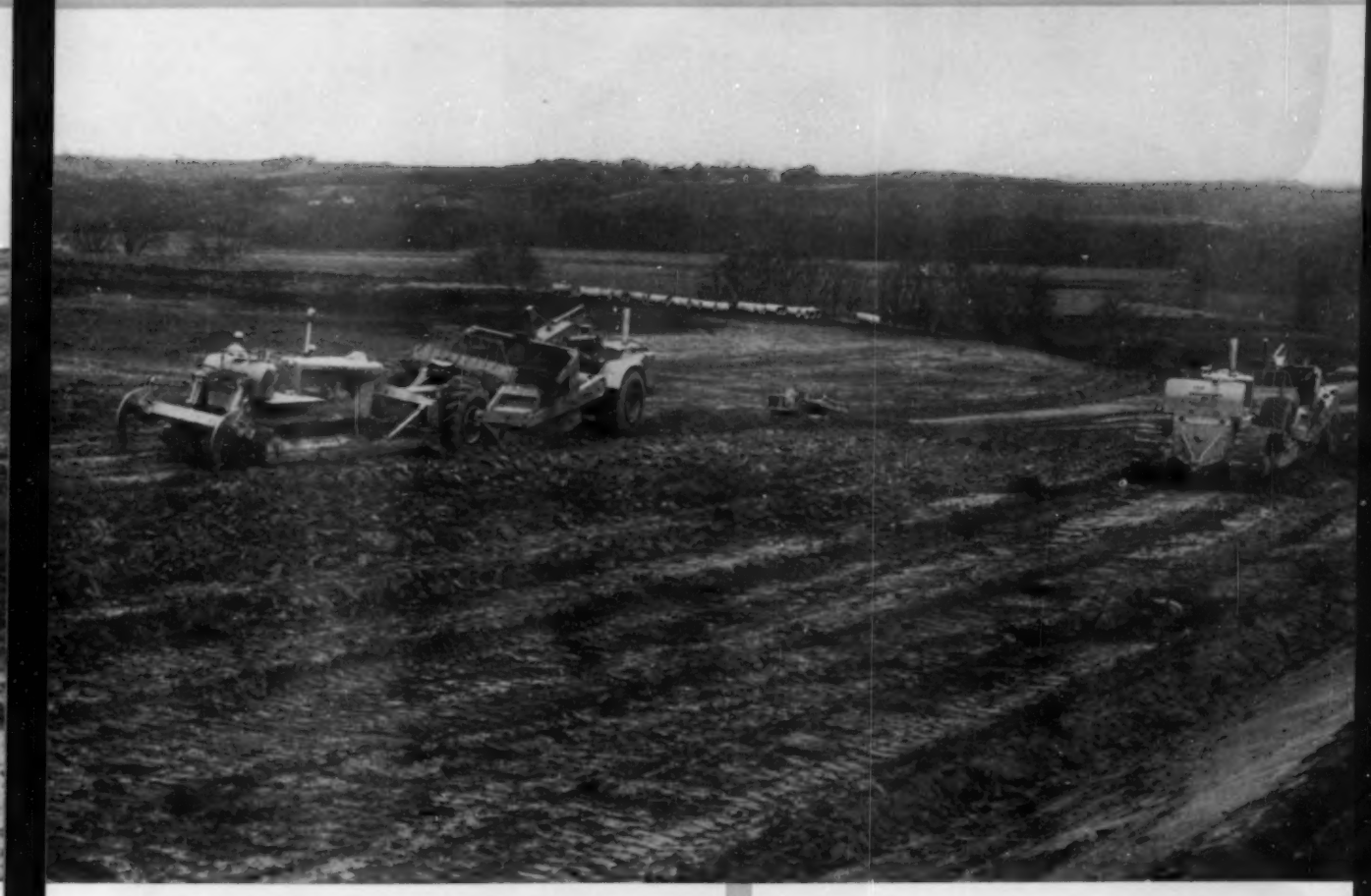
PERFORMANCE: "The D9 just can't be beat for power and for all-around performance. It really is showing its stuff in this tough clay. And this is our fourth season with some of the older DW21s. We've never had any transmission trouble or had the bowl off any of them. I feel sure our new DW21s will give us as good or better service."

JACK R. HEPP
Project Manager

AMERICA'S new highway building program presents the nation's road builders with their greatest opportunity . . . their biggest challenge. That's why you'll find contractors using Cat-built equipment wherever you find the big, tough jobs. All the way up to the giant 320 flywheel HP D9, there's a complete line of Caterpillar track-type Tractors designed to deliver more production at lower cost with less down time. Whatever your own needs may be, just call your Caterpillar Dealer for a

builders

THEY'RE WORKING ON DIFFERENT SECTIONS OF U. S. 69 (IOWA'S NORTH-SOUTH INTERSTATE HIGHWAY). THEY'RE ENCOUNTERING DIFFERENT PROBLEMS. BUT THEY'RE BOTH DEPENDING ON CATERPILLAR FLEETS TO SOLVE THEM.



D8 with No. 8 Ripper push-loads a DW21, while at right a D9 push-loads a second DW21. Says Foreman Don Washburn: "Our new D8 with its ripper is really a productive unit."

demonstration. And remember this: you can count on him to back all his equipment with efficient 24-hour service and quality Caterpillar parts.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

WANTED—THE HARD WORK

CONTRACTOR: R. B. Burch, Inc., Cedar Rapids, Iowa.

JOB: Moving 3,000,000 cu. yd. for a 10.8-mile section of Route 69, west of Indianola, Iowa. Cuts up to 50 feet.

CATERPILLAR FLEET: Two D9s, D8 with No. 8 Ripper, two D8s with sheepfoot tampers, 11 DW21s, and a No. 12 Motor Grader.

MATERIAL: Clay.

PRODUCTION: 35,000 cu. yd. per 20 hours on 3,600-foot round-trip haul.

PERFORMANCE: "Our new D8 with its ripper is really a productive unit. It loosens this hard clay, saving wear on our machines and giving us bigger loads. And our new DW21s are doing a great job. With the new LOWBOWL design, we load in the same amount of time or less and get three more yards per load."

DON WASHBURN
Foreman

Jim Leinbach (left), superintendent for Slate-Hall, personally handles one of the job's important details—passing out a pay check to a member of the clearing crew.

Slate-Hall . . .

Continued from page 56

land anywhere nearby. But the yard has room for several pieces of heavy equipment, a mobile grease truck, and superintendent's pickup trucks.

Located only 40 miles from Spokane, the job is favorably accessible to mecanical spare parts sources. For that reason, extensive parts inventories do not have to be maintained in the field.

Preventive maintenance, however, is aimed at predicting possible mechanical trouble and correcting conditions in advance. Weekends are used for preventive welding, operating adjustments, major lubrications and repair jobs. Equipment in the field is serviced by mobile Lincoln lubricating pressure guns. And engine oil and filters are changed at 60-hour intervals. Water tankers which sprinkle haul roads do that job for a two-fold purpose—for the convenience of traffic and to keep dust down where it can't harm the engines of construction machinery.

All told, the job is an excellent example of modern highway building on a large scale. It demonstrates the newest trend in highway building—a trend toward larger earthmoving quantities with equipment of commensurate size.

The project is under the general supervision of W. Bryce Bennett, state highway engineer of the Idaho department of highways. A. J. Sachse is district engineer and Kurt Luerzer is resident engineer in charge of construction. For the contractors, J. N. Leinbach is general superintendent. He is assisted by Charles Dillon, master mechanic; Doug Luna, excavation superintendent; Elmer Erickson, drilling-blasting superintendent, and Earl Darrow, office manager.

Wire Rope . . .

Continued from page 39

stops. The sudden reduction of tension weakens cable considerably.

In almost every application in which cable is used, there are points at which wear is more rapid. Therefore, it is economical to reverse the cable, end for end, when wear becomes apparent.

Some owners have equipped their dozers with a small spare drum or reel of cable so only the length of the cable needed can be quickly fed through the "dead end" to replace the length of cable cut off or broken. When cable wear occurs on the drum end, the "dead end" wedge can be removed and new cable pulled through the system far enough to eliminate the worn section. The worn cable, anchored to the cable control drum, can be cut off as necessary and the "dead end" wedge reinstalled. Also, by cutting off one or two feet of cable periodically, "fresh" cable is located at critical wear points.

A similar method of obtaining maximum cable life can be used on scrapers. The reels, which are mounted on the scrapers, carry extra cable which can be pulled through the system a sufficient distance to provide an unworn section of cable over sheaves. The worn cable on the cable control drum can then be cut off as necessary.

A ¾-yd. Lima dragline diverts course of a mountain creek. Numerous channel changes were needed to straighten the 7.2-mile section of U. S. 10 east of Couer d'Alene.

Doing as much as three power shovels and a dragline, this TD-18 4-In-1 dug up, and loaded, up to 1,700 feet of old concrete pavement daily—for Henry E. Berghuis, Prinsberg, Minnesota. Famous pry-action break-out makes the big difference over other rigs!

Don't let a single-action loader hold you up... see how a 4-in-1 multiplies your profit-range by four!

You've got a gun in your back two ways—with an old-style, single-action "dip-and-dump" tractor loader!

It holds you up on price, by giving you only the one machine action for your money. It hijacks profits, by sharply limiting job range and capacity.

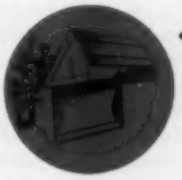
Now, see what a contrast, in multiplied value and earning power, an International Drott 4-In-1 offers!

4-machine utility — one-machine price!

An International Drott 4-In-1 gives you four built-in, multiple-duty, big-capacity machine actions, for only a one-machine price. Your fingertip command, through the "machine-selector" lever, instantly puts any 4-In-1 action you need at your service.

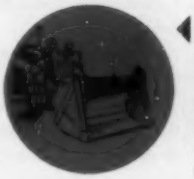
Skid-Shovel action gives you exclusive, "concrete-smashing" pry-action break-out—with famous bucket-heaping, ground-level roll-back. "Carry-type scraper" is your accurate grading, stripping, spreading, or compacting action. Clamshell action provides one-gulp "stand-and-fill" ability, plus hopper-high, self-cleanout, bottom-dumping. Bulldozer action delivers aggressive, big-yardage, earth-rolling ability.

Ease into the foam-cushioned seat—prove that your 4-In-1 investment will multiply your job-taking, money-making ability. And compare the performance protection of exclusive shock-swallowing Hydro-Spring to unprotected hose-bursting, machine-mauling "lunge-and-lift" design. Ask your International Drott Distributor to demonstrate the top buy, by far, in the construction machinery world: the 4-In-1 size that fits your needs!

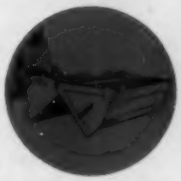


Bulldozer... with clam lip up and shoes on the ground, it's a big-yardage, earth-rolling blade!

"Carry-type scraper" ...that grades, strips, or spreads with inch-close accuracy.



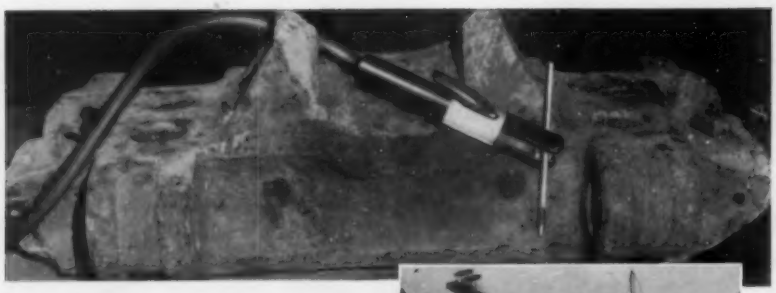
Skid-Shovel . . . with Drott's exclusive pry-over-shoe break-out and ground-level roll-back.



Clamshell... that fills itself in one fast gulp — gives you hopper-high, self-clean-out dumping.

International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

INTERNATIONAL® DROTT®



6 Ways Arcair Cuts Repair Costs On WORLD'S BIGGEST SHOVEL

HERE IS HOW . . . Arcair torches and Copperclad electrodes have cut costs substantially on the Mountaineer. Gouging hardened areas of manganese or high carbon pads, chains, bucket lips, teeth or sprockets with Arcair is faster, reduces lost time, permits better fusion to the parent metal. Cutting or gouging with Arcair eliminates four different methods of metal removal. It is 10 times faster than grinding and appreciably faster than other methods used. Welding helpers learn to use this torch in about fifteen minutes.
Using only an electric arc and compressed air, the patented Arcair torch used with genuine Arcair Copperclad electrodes is the new, efficient and money saving answer to most metal removing problems.

See proof of performance from many industries!

WRITE TODAY for FREE Brochure.

Arcair COMPANY

458 South Mt. Pleasant St., Lancaster, Ohio

Flood Channel . . .

Continued from page 37

floor slab, will be built with steel side forms exactly like a paving lane on a highway or airfield. Alwood's Foote 34-E dual-drum paver is being readied for high-speed pouring as welders in the Altadena yard install a long dump boom nearly twice the conventional 30-ft. length. That will enable the paver to spot itself on top of the berm or on the channel floor to mix and place the concrete. The company also is working out a suspended vibratory spreader for distributing the concrete, and a Maginnis high-frequency vibrating system to consolidate the material.

Going together fast, too, are 17 sets of special sidewall forms in panels 50 feet long. These can be handled easily by the 22-B Transit Crane. They are being made strong, for repeated use. Two-inch tongue-and-groove facing is being used, fastened to 4-in. steel channels with 4x 4-in. wood cross members on top. The two opposite panels in any pour will be held tightly together, safe from spreading under the pressure load of heavy concrete, by 53-in. high-tensile CP concrete bolts, 1 and 1¼-in. in size.

Following placement of the concrete, the backfill will go in, the top fence will be placed and the site will be dressed. Consolidated Rock Products Corp. has set up a plant which is in the exact center of the job, and that too will make for extra concrete speed. The final dressing of the project may take an extra six weeks or so after concrete is finished, but during that time the completed channel will be ready for any floods which may occur. With San Antonio Dam in place and the channel completed, it is extremely doubtful whether a disastrous flood like the one of 1938 could reoccur.

Actually the new system is equipped to work two ways in handling water. Diversion gates at the dam will permit the operator, if conditions make it safe to do so, to drain the impounded reservoir out through a diversion channel and into vast spreading grounds nearby. If this is done slowly, the water will seep down through the porous overburden structure to recharge underground water reserves. During a serious, long-protracted rainy period, the diversion gates can be closed and the new channel used as a wasteway from the dam. Used in that way, the channel will carry flood runoff safely and at high speed down toward Santa Ana River, Prado Dam and the sea.

Alwood Corp. is headed by James Kirst, company president, who is also head of Kirst Construction Co. Frank Kirst is vice president. All field operations on the project are under supervision of Project Manager Art Murphy. Col. Arthur H. Frye is district engineer of the Corps of Engineers' Los Angeles office. William J. Leen is head of operations, assisted on civil works by O. H. Ochsner. Jack Maxwell has charge of field supervision as resident engineer.

Strip Mine . . .

Continued from page 29

a lot of small operators like us—but I think there's enough business for everybody. Where possible, in fact, I'm always willing to pitch in and help competitors—we're all about equal in size and volume—with their pit problems. They occasionally return the favor. It's good competition from a fair bunch of guys, and it helps business."

Hummel lives on Enterprise Road in Grove City. His showplace-type stone ranch home fronts a 65-acre farming and grazing tract—he plans to raise ponies on it. Located on a hilltop overlooking the city, the sprawling eight-room home has such features as thermopaned windows, a master-control lighting system, and a built-in high fidelity radio-recording system.

The Hummels—Ed and Ethel—have a 4½-year-old daughter, Judith Rose, who is the "flower of daddy's eye," according to Mrs. Hummel.

After graduating from Grove City High School in 1927, Hummel handled miscellaneous jobs until 1932, when he returned to free-lance trucking. From 1936 to 1941, he was a superintendent on a WPA road project in Mercer County. During 1941-42, he was with Frazer-Brace, Engineers, of New York, acting as a civil engineer on roads and highways at the Keystone Ordnance plant. From 1942 through 1945, Hummel was with the Seabees as an enlisted man in the airport construction division. He received a battlefield commission as a chief warrant officer.

In the spring of 1946, he went into business, forming the Grove City Construction Co. with Glenn Mathieson of Grove City. Mathieson retired from the company last April. After putting in three secondary roads in Venango County, Hummel became interested in the coal business—he's been at it successfully ever since.

Loaded and ready — with less hazard from stray currents

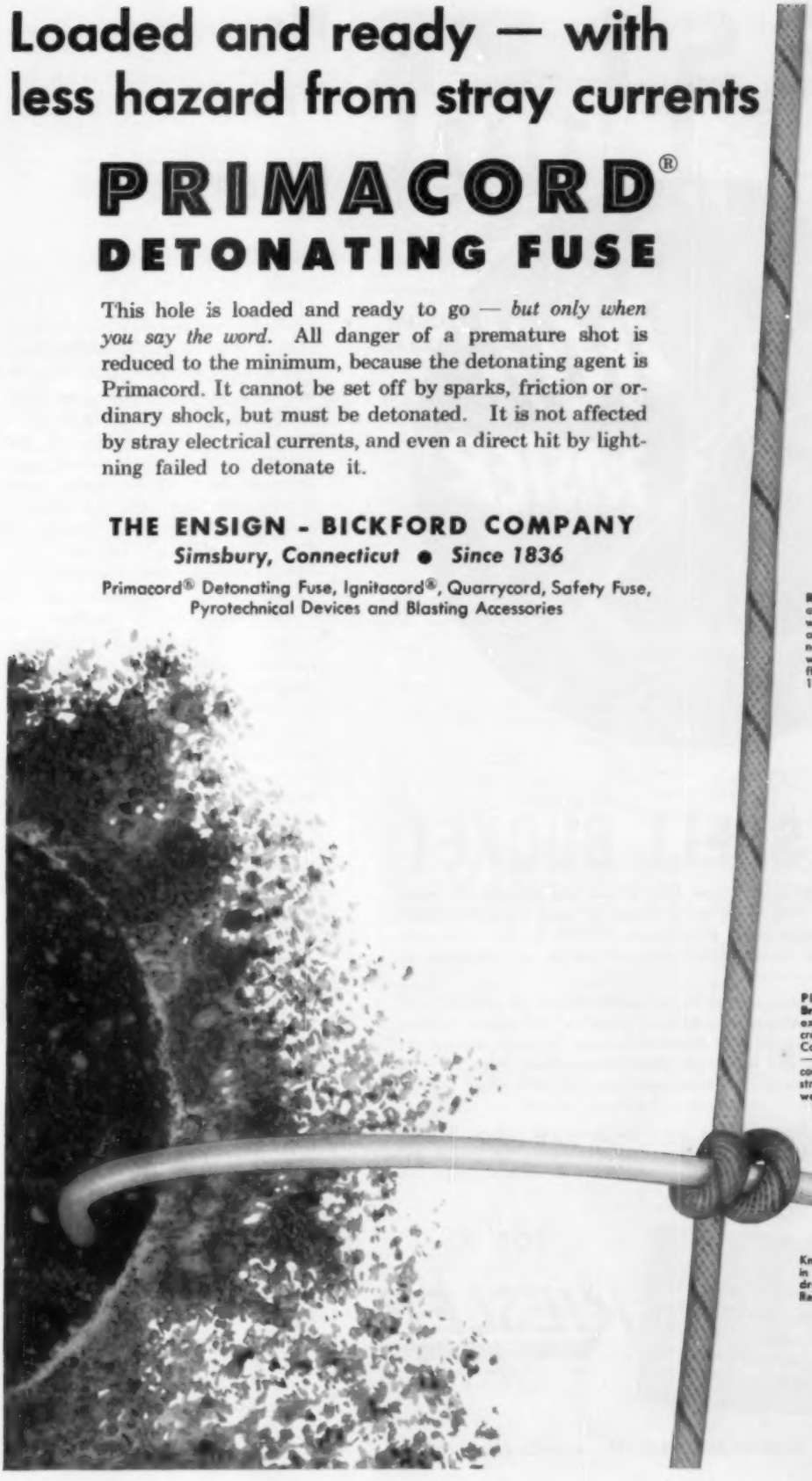
PRIMACORD®
DETONATING FUSE

This hole is loaded and ready to go — *but only when you say the word.* All danger of a premature shot is reduced to the minimum, because the detonating agent is Primacord. It cannot be set off by sparks, friction or ordinary shock, but must be detonated. It is not affected by stray electrical currents, and even a direct hit by lightning failed to detonate it.

THE ENSIGN - BICKFORD COMPANY

Simsbury, Connecticut • Since 1836

Primacord® Detonating Fuse, Ignitacord®, Quarrycord, Safety Fuse, Pyrotechnical Devices and Blasting Accessories



Reinforced Primacord Trunk Line — also recommended for deep holes where normal strength and resistance to abrasion and cutting are needed. Textile reinforced (yellow with red thread), tough, resilient, flexible. Tensile strength 170 lbs. 1000-ft. spool weighs 18 lbs.

Plastic Reinforced Primacord Branch Line, recommended for extremely deep holes — also river crossings and other wet conditions. Covered with a tough plastic material — waterproof and resistant to acids commonly encountered. Tensile strength 250 lbs. 1000-ft. spool weighs 22 lbs.

Knot shown is the clove hitch, made in Plain or Reinforced Primacord and drawn tightly around the Plastic Reinforced Primacord.

P-2

KIESLER

CLAM SHELL BUCKET

With Kiesler 2-Line, 2-Lever-Arm Clam Shell Buckets you can actually speed up work a good 40%. This is due to the Mighty Ice Tong Principle incorporated in the 2-Lever-Arms, which places equal POWER on both shells and guarantees deep down digging action, and more power with less parts to the line, and less rope overhaul.

For faster more precise dumping, all Kiesler Buckets feature an exclusive shell design that provides a more positive dumping angle the very second the jaws start to open than others do when almost fully open. In loose material the load slides out swiftly and completely when only partially open . . . in sticky material, the exclusive shell design guarantees a release from binding suction the very moment the load moves a fraction of an inch.

Profitable results: Handling costs are cut to the bone and spillage is eliminated due to spot dumping. Kiesler's the one for you . . . The bucket that out-digs, out-speeds, out-lasts all others. Write for details on how Kiesler can help in your operation.

GUARANTEE

Kiesler Buckets are guaranteed to outperform and do a bigger day's work than any other Bucket of equal weight, width and size, when properly reeved and operated.

JOS. F. KIESLER CO.
Since 1892

944 W. HURON ST. • CHICAGO 22, ILL. • MOnroe 6-7144

New Trade Literature

Subject: **Payhaulers**

Content: The hauling cycles of International Harvester models 95 and 65 Payhaulers are analyzed in a 16-page catalog. The booklet is divided into four sections describing each phase of the haul cycle — spotting, loading, hauling and dumping. Close-ups of components that contribute to the advantages of the Payhauler on each phase of the cycle accompany each section. Ask for catalog CR-603-6.

Where to get: Construction Equipment Div., International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill.

Subject: **Manitowoc Excavator**

Content: A 16-page booklet describes the model 3000 series of 2-yd. shovels, draglines and 40 to 50-ton cranes. In addition to full specifications of these units, the bulletin lists in detail many engineering features.

Where to get: Manitowoc distributors or Manitowoc Engineering Corp., Department MRS, Manitowoc, Wis.

Subject: **Telescopic Hoists**

Content: A 4-page catalog describes Uni-scopic single front mounted and Duo-scopic twin front-mounted telescopic hoists. Descriptions and specifications cover 9 hoist models, with payload capacities from 9 to 34 tons. The illustrated catalog contains action, detail and cutaway photos. Matching bodies and payload-adding accessories are also shown. Ask for catalog LL-4094.

Where to get: Galion Allsteel Body Co., Department EE, Galion, Ohio.

Subject: **Hydraulic Angledozer**

Content: A power-angling dozer blade for 80 and 100-hp TerraTrac crawler-tractors is featured in a new Case bulletin. It shows through diagrams and illustrations how the operator moves a lever to angle the blade to either side by hydraulic power. Charts comparing tractor power, speeds and blade action with competitive angledozers are included, along with an

Continued on page 66

TO ADVERTISE: All advertising in this section is payable in advance. Rate: $1.00 per line, or $12.00 per inch of 12 lines. Minimum charge $4.00. No discounts; no commissions. Please count your copy carefully to avoid delay. Each line contains 41 characters (34 characters if all capital letters are used). Count spaces and punctuation as one character each. Allow 10 characters for box number. If blind advertisement is desired. Be sure to enclose the correct amount of money with your order. Closing date—10th of preceding month. Example: January closes December 10th.

TO INQUIRE: Be sure to address your inquiry to the advertiser by using the correct box number. Mail your letter in care of Excavating Engineer, South Milwaukee, Wisconsin. Write each advertiser a separate letter. Do not write us for name and address of advertiser. This information will not be given out. We have no information about the equipment advertised other than that shown in the advertisements themselves.

LARGE SHOVELS, CRANES, DRAGLINES — 3 YDS. & UP

Bucyrus-Erie 200-W diesel dragline shipped in 1950; 125 ft. boom, 6 yd. heavy duty and 7 yd. light weight buckets; some spare parts included; good mechanical condition. Location Melbourne, Australia. Box 3682

Bucyrus-Erie Model 5-W Diesel dragline, 100′ boom, 25′ insert extension. Fairbanks-Morse main engine, auxiliary 100 HP Cummins for swing generator, includes two (2) Esco buckets, one five yard and one six yard. Owner using machine and can be inspected in actual operation, very good operating condition, located in Northern Illinois. Price including buckets and approximately $5000 worth of spares. $60,000 as is. Box 3716

2-W Monighan Walking-Type Dragline #492, 85′ boom, 2-year old D-13000 Caterpillar diesel engine #4S685, 2-yard Hendrix bucket, 2½ yard Page bucket, some spare parts, fair operating condition. Box 3708

Bucyrus-Erie 120-B dragline, 100′ boom with gantry mast, 4′ tracks, A-1 condition, located northern California.

THURMAN & WRIGHT
625 Market Street San Francisco, Calif.

SMALL SHOVELS, CRANES, DRAGLINES—UP TO 2½ YDS.

FALL CLEARANCE SALE

Bucyrus-Erie 15-B Clamshell Crane, serial #115879, 35′ boom, 24″ pads, pendant suspension, maximum counterweight; less than one year old and in new condition; priced to sell.

Diamond, Model 77, All-American Portable Crushing and Screening plant, new in June 1956 and has run approximately 100,000 tons of material; 10x30 jaw crusher with new jaws, roll crusher, 4′x12′ 2½ deck screen, all conveyors 30″ width; less than ½ of new price for a portable plant in excellent condition throughout.

2 Buckeye 120 Ladder type Trenchers; equipped to cut 24″ wide and 11′6″ deep, one machine has set of 12″ and 24″ buckets extra, so machine will cut from 18″ to 36″ wide; both in good condition.

Buckeye 407 Ladder type Trencher, serial # 111; will dig 24″ wide and 8′ deep; powered by a Chrysler gasoline engine; also includes a quantity of spare parts; a good machine throughout.

3 Rex 3½-yd. Truck Mixers, mounted on GMC single axle trucks; bargain priced; make an offer, with or without trucks.

Osgood ¾ or 1-yd. clamshell crane with 45′ boom; an old dog, but it will operate; make an offer.

Call or wire collect:

BEASLEY-HOLMES COMPANY
3020 Reynolds Road FRanklin 1494
Toledo 6, Ohio

Model H-3, ¾-yd. clamshell bucket, tagline reel, like new. Price: $950. Write: H. B. Park, Jr. IMC Equipment, Inc., 720 Spring St. NW, Atlanta 8, Ga.

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

38-B BUCYRUS-ERIE 1½-Yd. DIESEL SHOVEL, GMC-671 engine, torque converter; located at Seattle.

22-B BUCYRUS-ERIE DIESEL SHOVEL, Cat D318 engine, electric starter; located at Seattle.

25 NORTHWEST DIESEL SHOVEL, long tracks, Murphy engine, 2-speed travel; located near Seattle.

25 NORTHWEST DIESEL HOE, GMC3-71 engine; located at Seattle.

CLYDE EQUIPMENT COMPANY
3410—1st Ave. South Seattle, Washington
Phone MAin 1235

H-3 Hydrocrane, Serial #97025; converted to self-powered, w/6-cyl. LeRoi gas engine, w/elec. starter and batteries. Selector valves and foot controls installed. Std. length crane. Clamshell eq. incl. 2-ram bucket dragshovel eq. Carrier: 6x6 GMC w/Tulsa winch (front mtd.). Good working condition. Price: $8000 net. Write: West Coast Engine & Equipment Co., 1081 Eastshore Highway, Berkeley, Calif.

H-3 Hydrocrane-Hoe, serial #108671, GMC 352-24 truck, 2-speed rear axle and no-spin differential lock. Price: Crane only, $9000; crane and hoe, $10,500. 1st class operating condition. Write: Mr. R. F. "Joe" Phillips, Richardson Tractor Co., P. O. Box 330, Clarksburg, W. Va.

H-3 Hydrocrane, serial #97026, with 29″ magnet, International L-162 truck serial #63731. Price: Less generator and magnet eq. $8000; including generator and magnet eq. $10,500. Write: Browning-Ferris Machinery Co., Mr. R. H. Siler, P. O. Box 7966, Dallas 26, Texas.

Northwest Model 25 Crane, s/n 305C, with GMC 371 diesel engine s/n 3D19531 with ¾-cu. yd. clamshell, ¾ digging clam dragline, ¾ dragline bucket, 65′ boom, Rud-O-Matic tag line, revolving fair leads and 28″ treads. This crane is in excellent condition with slightly over 2000 hours.
Price $17,500

OEHLERT TRACTOR & EQUIPMENT COMPANY, INC.
Phone TAylor 3-4661 Salina, Kansas

Lorain L-80J, 1¾ yd. shovel, serial #23550 (1953), with Cat D337 engine, fluid coupling and air control. In our Denver Yard; engine hour meter reading 1800 hours; entire unit in very good condition.
F.O.B. Denver, Colo. $36,500
Shovel front for Lorain L-80J, 1¼ yd. Amsco dipper. F.O.B. Denver, Colo. .....$ 3,250
Lima model 604, 1½ yd. shovel, serial #324171 (1949), with 33″ wide treads, powered by Cummins model HIS diesel engine.
F.O.B. Casper, Wyo. $29,500
Link-Belt K-360, 1½ yd. shovel and dragline, serial #1985 (1940), with 55′ boom, 1½ yd. Page bucket, Cat. D13000 diesel engine, 1½ KW light plant, extra cwt. and spare parts.
F.O.B. Casper, Wyo. $16,500

THE COLORADO BUILDERS' SUPPLY CO.
1534 Blake Street WEst 5-3571
Denver 2, Colorado

P&H 1055 diesel shovel with 28′ boom, Marion 492 sticks and 2½-yd. dipper; Buda diesel engine; quantity of spare parts available at half price. Price f.o.b. Hyde Park, Vt.: $17,500. The Ruberoid Co., Hyde Park, Vt.

SMALL SHOVELS, CRANES, DRAGLINES — UP to 2½ YDS.

FOR SALE

625 Page Diesel Drag, 150′, 10 yd.
4500 Manitowoc Drag, 120′, 5 yd.
2400 Lima Drag, 120′, 6 yd.
111-M Marion Drag, 100′, 4 yd.
1201 Lima-Drag, 85′, 3 yd.
3500 Manitowoc Drag, 85′, 2½ yd.
54-B Bucyrus-Erie Drag, 85′, 2½ yd.
802 and 604 Lima Cranes
120-B Bucyrus-Erie 4 yd. Elec. Shovel
88-B Bucyrus-Erie 4 yd. Standard Shovel
1201 Lima 3½ yd. Standard Shovel
80-D Northwest 2½ yd. Standard Shovel
K-580 Link Belt 2½ yd. Shovel
51-B Bucyrus 2 yard Shovel
38-B Bucyrus-Erie Shovel-Crane
37-B Bucyrus-Erie 1½ yd. Shovel
22-B Bucyrus-Erie ¾ yd. Shovel
Unit 1020 ¾ yd. Shovel
Also, various smaller Shovels and Draglines
Truck Cranes—Lorain, Bay City, P&H & Link Belt
600 Reich Heavy Mounted Rotary Air Drills
Mayhew Rotary Air Drills
Euclid Trucks—Rear & Bottom Dumps
Caterpillar & International Dozers
Garwood, Allis-Chalmers & Euclid Scrapers

FRANK SWABB EQUIPMENT CO., INC.
313 Hazleton Nat'l. Bank Bldg.
Hazleton, Pa. GLadstone 5-3658

Northwest 25 Combination Dragline, Clamshell Shovel with Murphy diesel engine, serial #14716.
Price f.o.b. Greensboro, N. C. $14,000
Allis-Chalmers Model TS-300 Motor Scraper with Buda diesel engine, serial #592.
Price f.o.b. Greensboro, N. C. $10,000
Northwest 25 Shovel Front with ¾-yd. dipper.
Price f.o.b. Greensboro, N. C. .....$ 1,500

E. F. CRAVEN COMPANY
Greensboro, N. C.

Koehring model 303 heavy duty ¾-cu. yd. dragshovel, standard crawlers, Waukesha gasoline engine.
Michigan T6-K ⅜-cu. yd. truck crane and clamshell, gasoline engine, ⅜-yd. backhoe attachment, ⅜-yd. clamshell bucket.
Oliver 88 rubber tired tractor with ¾-cu. yd. hydraulic front end loader.
Osgood 4-wheel 12-ton pneumatic tired full trailer.
Vermeer 24-T trencher with Wisconsin 4-cylinder gasoline engine, 24″ cutters, 6′ depth.
Pettibone 175-D, 2-cu. yd., 4-wheel drive, planetary gear loader, 371 GM power, oversize tires —Demonstrator, excellent buy.
Ruhr .5 heavy duty grapple.
Wylie patchmobile—demonstrator.
LeRoi 105 compressor, gasoline, 2 pneumatic tires.

S. M. CHRISTHILF & SON, INC.
Timonium, Maryland VAlley 5-3100

Model H-5, ½-yd. clamshell bucket, tagline reel. Price: Clamshell, $900; tagline, $350. Write: Euclid Sales & Service, Inc., Mr. F. M. Sheldon, 5231 Manchester Ave., St. Louis 10, Mo.

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

One Bucyrus-Erie Model 41-B, 3 motor AC electric shovel, serial no. 10796, 1½-yd. dipper, cat-mounted, 26" treads; 22'6" boom, 15' handle; good operating condition. Many replacement parts for swing and crowd machinery recently installed or available. Located Mid-West.

One Bucyrus-Erie Model 52-B, Ward-Leonard electric shovel, serial no. 11395, equipped for 3 phase, 60 cycle, 440 volt operation; 2¼ cubic yard dipper, 30' boom, 18' handle; equipped with power boom hoist and electric light plant. Well maintained and in good operating condition. Caterpillar units recently overhauled. Located Mid-West. Box 3710

Northwest Model 95, serial #14294-11394C; Model 21 Murphy diesel, serial #15593; 80' boom crane/dragline revolving fairlead; folding gantry; 2-yd. capacity; holding line—⅞" x 190'; closing line—⅞" x 215'; tag line—⅝" x 100'; 38" wide tracks.

Northwest Model 95, serial #14405-11692C; Model 21 Murphy diesel, serial #MD10772; 80' boom crane/dragline; folding gantry; 2-yd. capacity; holding line—⅞" x 190'; closing line—⅞" x 215'; tag line—⅝" x 100'; 38" wide tracks. Box 3722

LORAIN MOTO-CRANE Model L41, 20-ton capacity, 30' boom, outriggers and screw jacks; mounted on standard factory carrier, 11:00x20—12 ply tires; good operating condition... $18,000.

LIMA Paymaster Truck Crane, Type E34, ¾-yd., 35' boom, powered by 6-cylinder Buda gas engine; mounted on Brockway 6x6 truck carrier with ten 12:00x24 tires; reconditioned..$13,000

LORAIN Model L820, 2-yd. combination Crane, Clamshell and Dragline, 50' boom, Rud-O-Matic tagline and fairlead, 35" pads, Waukesha diesel engine, subject to inspection $20,000

BUCYRUS-ERIE 22-B Clamshell Transit Crane, 50' boom, pendant suspension, 8-part tackle, Rud-O-Matic tagline, ten 11:00x20—12 ply tires, outriggers, good condition $25,000

LIMA Model 802, 2-yd. Shovel, with 36" pads, air controls, powered by a Cat D17000 diesel engine, with electric starter; reconditioned, tops $32,500

BUCYRUS-ERIE Model 15-B Hoe, ½-yd., powered by a Waukesha Model HP526 gasoline engine with electric starter; good condition. $7,000

P & H Model 255A Backhoe, ¾-yd., 26" tracks, diesel engine, reconditioned $16,500

Subject to Inspection & Prior Sale

H. O. PENN MACHINERY COMPANY INC.
140th St. & East River CYpress 2-4800
New York 54, N. Y.

MISCELLANEOUS EQUIPMENT

FORD MODEL JD-1025 GASOLINE ENGINE with radiator-flywheel, ring gear and starter. $200.

***ALL PRICES—**
F.O.B. SOUTH MILWAUKEE, WISCONSIN
BUCYRUS-ERIE COMPANY
South Milwaukee, Wis.

Two Model 29-T Churn Drills, crawler mounted, electric powered. Price f.o.b. Hyde Park, Vt.: $5,000 each.

Two Model 27-T Churn Drills, crawler mounted, electric powered. Price f.o.b. Hyde Park, Vt.: $2,500 each.

One Bucyrus-Erie #12 Bit Dresser. Price f.o.b. Hyde Park, Vt.: $2,500. THE RUBEROID CO., Hyde Park, Vt.

Model 27-T blast hole drill, serial No. 18269, Waukesha gasoline power, crawler-mounted, 33' one-piece all-steel derrick complete with tools in good working order. Located in Missouri. Priced to sell. Box 3718

Model 27-T blast hole drill, serial No. 19628, Waukesha gasoline power, crawler-mounted, 33' one-piece all-steel derrick complete with tools in good working order. Located in Missouri. Priced to sell. Box 3719

ONE—2¼-YD. COAL LOADING DIPPER, NEW FOR 38-B. LOCATED NEAR PITTSBURGH. $2500.
BOX 3720

MISCELLANEOUS EQUIPMENT

Bucyrus-Erie 10B shovel front complete with bucket; like new condition. Price can not be beat at $175; worth $500. Truck tandem assembly $125. 1625 E. Kearney, Springfield, Mo.

USED ATTACHMENTS
Cambered Hoe Boom for P&H 150 & 155; excellent.
Shovel Front for Osgood 200; also will fit P&H 150; used two weeks.
Shovel Front for Michigan T-6-D crane.
Bucyrus-Erie 22-B boom inserts, 5', 10', 15', 20'.
2 Bucyrus-Erie 22-B jibs; 10' basic with 10' insert.
Fairlead for 352 and 362 Marion crane.
20' boom sections for 352 and 362 Marion crane.

Call or wire collect:
BEASLEY-HOLMES COMPANY
3020 Reynolds Road FRanklin 1494
Toledo 6, Ohio

Tube Mill, 5'x18' heavy duty Allis-Chalmers with drive gears, shaft, bearings and motor, no liners; excellent condition; bargain.
Double deck vibrating screen, 3'x6'; Simplicity, practically new.
Both in Central California. Box 3727

BOTTOM DUMP EUCLIDS
4—17 Yd. Euclids @...$13,500 Each
11—13 Yd. Euclids @... 9,500 Each
1—¾ Yd. Shovel Front for Model 41 Lorain
All this equipment in excellent operating condition and can be seen at work in South Alabama

McDOWELL & McDOWELL, CONTRACTORS
P. O. Box 1144 Phone ALpine 5-0304
Nashville, Tennessee

1—1¼ yd. rehandling clam, Haiss
1—2 yd. rehandling clam, Haiss
1—2½ yd. dragline, MS, Hendrix
1—3¼ yd. dipper (rock), Esco

SERODINO, INC.
Cincinnati 16, O.
VAlley 1, 3161

FALL CLEARANCE—USED TRACTORS
International TD18A, with Pullman angle dozer, serial #TDA32500; has new rails, idler and roller kits installed; engine excellent; new in 1954.
Case "Terratrac," Model 500, gasoline tractor with angle dozer; 1½ years old, and in good condition.
International 300 Wheel Tractor with Henry Loader and Backhoe, 1 year old; condition and appearance excellent.
Oliver HG-60 wide gauge loader; as is $500.

Call or wire Collect:
BEASLEY-HOLMES COMPANY
3020 Reynolds Road FRanklin 1494
Toledo, Ohio

1—Unused 22-B, 30 (a) Positive Crowd Shovel Equipment, 18' boom and machinery, 14'6" handle, ¾-yd. dipper, with dipper trip.
F.O.B. Minneapolis $2500
write or call
WM. H. ZIEGLER CO., INC.
2929 University Ave. S.E. FRanklin 1-7971
Minneapolis 14, Minnesota

POSITION WANTED

22 Years experience as machine shop foreman and master mechanic of strip mine operations, excellent references. Box 3726

New Literature . . .

Continued from page 64

explanation of the "counter-rotating" Terramatic transmission. Also explained are the advantages of torque converter drive and torsion bar track suspension system. Ask for bulletin CTS-106.

Where to get: J. I. Case Co., Department EE, Racine, Wis.

Subject: **Clamshell Buckets**

Content: A 16-page two-color booklet lists various types of Owen buckets and their operating advantages. Features diagrammed and explained include block-and-tackle type reeving; one-piece head construction; riveted bowl assembly; single main shaft; and recessed lips. Photos illustrate three and four-line industrial buckets in 2¼ to 5½-yd. sizes; two-line general use buckets from ⅓ to 6 cubic yards; and grapples for handling rock, scrap and pulpwood. Ask for form No. 100.

Where to get: Owen Bucket Co., 6031 Breakwater Ave., Cleveland 2, Ohio.

Subject: **Tractor Parts**

Content: Caterpillar has issued three new literature items. *Friction Facts* is an 8-page booklet that answers questions about friction material in clutch facings and brake linings. It points out vital characteristics friction material must have in order to withstand the severe conditions imposed by earthmoving machines. Loss of friction, glazing, and chipping, wear and torque capacity are discussed. Ask for form DE 747. Benefits from using Cat grease seals in Cat-built equipment are explained in the second booklet, *The Big Three.* The big three are special leather facings, proper contact pressure and heavy-duty diaphragms designed into each seal. The booklet outlines why every owner or prospective owner should place extra emphasis on the grease seals used in his machine to get the proper work from it. Ask for form 32449. *Shop Talk,* an 8-page booklet, describes the dealer's role in supplying prompt parts and service to machine owners. It shows the specialized tools and training facilities available to Cat dealer servicemen and also tells how owner's operators and mechanics may enroll in dealer "Cat Care" schools. Ask for form No. D745.

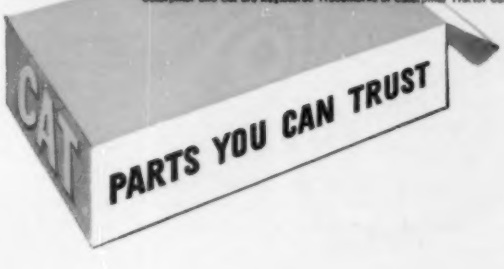
Where to get: Caterpillar dealers or Caterpillar Tractor Co., Peoria, Ill.

Take a piston. Its place of business in a CAT® Diesel Engine is in the "heat zone"—up to 3600° F. Here's where some substitute pistons soften, crack and burn through. But not a genuine Caterpillar piston. Copper, nickel and magnesium are alloyed with aluminum to maintain hardness and strength under these high temperatures. Yet, the special aluminum alloy retains the high weight-to-strength ratio and heat conductivity of aluminum. With a substitute, can you be *sure*? Better see your Caterpillar Dealer for parts you can trust!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.



SEEPAGE WATER ON ST. LAWRENCE SEAWAY CONTROLLED WITH EFFICIENT PUMPING

These two Marlow self-primers pump water from a collecting basin up over a 30-foot bank to discharge it into the St. Lawrence River.

This 10-inch, engine-driven Marlow self-priming pump and a companion Marlow, that was mounted on a raft, operated on a 24-hour schedule to control seepage water.

Marlows Work 24 Hours a Day to Keep Seaway Excavation Workable

Before starting work on the main channel improvement at Galop Island in the St. Lawrence River, it was necessary to reduce the speed of flow by diverting water through a relief channel. This channel was dug on the American mainland near Red Mills, New York. When the excavation was started, a cofferdam was built at the upstream end of the job to hold back the water until the work was completed.

Seepage water became a critical problem as the digging progressed to a grade below the level of the river. To control the seepage, Morrison-Knudsen Co., Inc., installed two big Marlow self-priming contractor's pumps. The pumps were located at a collecting basin at a low point of the excavation. One of the skid-mounted, 10-inch pumps was mounted on the bank, while the other engine-driven unit *was placed on a raft that was floated in the basin!* Both pumps were used during peak periods to carry water up over the 30-foot embankment and into the river. While the pumps have a combined capacity of 360,000 GPH on continuous service, they can actually handle up to 400,000 GPH in emergencies.

In addition to a complete line of AGC rated self-priming centrifugal pumps, Marlow also builds the famous "Mud-Hog" diaphragm pump that handles muddy and trash-laden liquids. All these pumps are readily available from any of the three strategically located Marlow plants. Look for the heading "Marlow Pumps" in the "yellow pages" of your Classified Telephone Directory or ask your Marlow dealer about Marlow's contractor's pumps.

Marlow PUMPS

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